Linda S. Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maureen F. Gorsen, Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Arnold Schwarzenegger
Governor

September 8, 2008

Mr. Buzz Winchell
Sacramento Stucco
860 Riske Lane
West Sacramento, California 95691

APPROVAL OF THE REMOVAL ACTION WORKPLAN FOR SACRAMENTO STUCCO, ASSESSOR PARCEL NUMBERS 058-310-18 AND 058-310-19, WEST SACRAMENTO, CALIFORNIA

Dear Mr. Winchell:

The draft Removal Action Workplan (RAW) and the proposed Notice of Exemption (NOE) for the property located at 860 Riske Lane Yolo county, West Sacramento, California, underwent a 30 day public comment period from July 30, 2008 to August 28, 2008. The comment period allowed the general public to review the proposed RAW and the proposed NOE and to write to the Department of Toxic Substances Control (DTSC) if they had any questions or comments. The DTSC did not receive any written comments on the project and thus considers the draft RAW and NOE as final and is hereby granting our decision of approval on the documents.

The RAW outline proposes the excavation and off-site disposal of 2,300 cubic yards of soil contaminated with lead at concentrations exceeding levels that are protective of human health for an unrestricted land use. Trucks will transport the contaminated soil to an authorized landfill for disposal. Following implementation of the RAW, a completion report will be prepared which will detail the work performed and provide results of confirmation sampling to show that the remaining soil on the property will be protective of human health and the environment.

You may proceed with implementing the RAW at your discretion. However, please notify me at (916) 255-6679 at least 30 days prior to commencing the remediation effort so that a start work notice can be created and mailed to the appropriate mailing list.

Sincerely,

Leona Winner

Leona Winner
Project Manager
Sacramento Office
Brownfields and Environmental Restoration Program

cc: See next page.

cc: Mr. K. Greg Peterson, Esq.
1716 L Street
Sacramento, California 95814

Dr. Ijaz S. Jamall
2033 Howe Avenue Suite 240
Sacramento, California 95825

REVISED
REMOVAL ACTION WORKPLAN
SACRAMENTO STUCCO
860 RISKE LANE
WEST SACRAMENTO, CALIFORNIA

Prepared For:

Mr. Buzz Winchell
Sacramento Stucco Company
860 Riske Lane
West Sacramento, California 95961

Prepared By:

Risk-Based Decisions, Inc.
2033 Howe Avenue, Suite 240
Sacramento, California 95825

September 14, 2007

RISK-BASED DECISIONS, INC.

2033 HOWE AVENUE, SUITE 240 • SACRAMENTO, CALIFORNIA 95825
(916) 923-0570 FAX (916) 923-0611

September 14, 2007

Ms. Leona Winner
Department of Toxic Substance Control
8800 Cal Center Drive
Sacramento, California 95826

Dear Ms. Winner:

Enclosed is our *Revised Removal Action Workplan* for the Sacramento Stucco Company with the changes you suggested in your letter of July 11, 2007.

If you have any questions regarding this Workplan, please do not hesitate to contact me at (916) 923-0570 ext. 13.

Very truly yours,

Ijaz S. Jamall

Ijaz S. Jamall, Ph.D., DABT, REA-II
Principal Scientist

Enclosure

cc: K. Greg Peterson, Esq.
Mr. Buzz Winchell

PROFESSIONAL CERTIFICATION

This *Revised Removal Action Workplan* for Sacramento Stucco at 860 Riske Lane in West Sacramento has been prepared by and under the direct supervision of a California Professional Geologist.

Ijaz S. Jamall, Ph.D., DABT, REA-II
Principal Scientist

REGISTERED ENVIRONMENTAL ASSESSOR
IJAZ JAMALL, Ph.D.
No. 20113
Expires 4/2008
STATE OF CALIFORNIA

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1.0 INTRODUCTION

This Removal Action Workplan (RAW) describes the excavation and disposal of soil impacted by past battery recycling operations at 860 Riske Lane in West Sacramento, California (the site). The property, parcel number 058-310-18, is currently occupied by a stucco warehouse and retail facility, and is expected to be sold for redevelopment at some future date.

The site was occupied by the C&S Battery and Lead Company (C&S) from 1973 to 1978. During this time, C&S reclaimed lead alloy from lead-acid batteries. Investigation of the site began in 1981 when C&S characterized and removed lead-contaminated soil over the cleanup criterion of 1,000 mg/Kg applicable at the time under the oversight of the California Department of Health Services (CDHS, 1980a). Between 1993 and 1995 two underground storage tanks (USTs) were removed under the supervision of the Yolo County Public Health Department, Environmental Heath Division (YCPHD-EHD) by Tank Project Engineering, 1993 and EBA Waste Technologies, 1995. The UST project was closed based on sampling results summarized in Section 2.2.1 of this RAW.

This RAW is written in accordance with information contained in Phase I and Phase II Environmental Site Assessments (ENGEO, July 29, 2005; ENGEO, December 7, 2005; January 20, 2006). Supplemental site investigation and data transmittals were performed by Risk-Based Decisions, Inc. (RBDI) dated June 5, 2006; July 17, 2006 under a Voluntary Cleanup Agreement with the California Department of Toxic Substances Control (DTSC) and in accordance with a DTSC-approved Workplan for Soil Sampling (DTSC, 2006).

Additionally, 11 soil samples were selected, with DTSC concurrence, and tested for the possible presence of CAM-17 metals, to ensure that no other potentially toxic metals were elevated at the site.

1.1 Removal Action Objectives

Testing has revealed that the site contains lead above the current regulatory default threshold of 150 mg/Kg for residential land use referred to as the California Human Health Screening Levels or CHHSLs (Cal EPA, January 2005). Soil samples were taken at one, two, three, and five feet below ground surface (bgs) and elevated levels of lead were found as deep as five feet bgs. Only the northern parcel (APN 058-310-18), formerly occupied by C&S, was found to contain lead at levels above the residential CHHSL.

CAM-17 testing of the 11 DTSC-specified samples revealed arsenic at 31mg/Kg in one sample (RS-3 at one foot depth) over the CHHSL (Cal EPA, 2005) and also above the range of arsenic concentrations of 3.6 to 9.6 mg/Kg found in other site samples.

Antimony was detected at TS-1 at 1 foot depth at 39 mg/Kg, above the CHHSL of 30 mg/Kg. Lead at this location was 9,200 mg/Kg. As will be discussed later, a small amount of antimony is used in lead alloy for lead-acid batteries and it is to be expected that antimony will be above CHHSL at locations where lead concentration is highest but unlikely elsewhere.

All other CAM-17 toxic metals were below regulatory thresholds.

There are two primary objectives of the proposed removal action:

- To ensure protection of human health and the environment;

- To ensure that all of the potentially toxic metals are safely removed, tested, and disposed in a manner consistent with the laws and regulations governing such materials.

2.0 SITE BACKGROUND

2.1 Site Location and Description

Sacramento Stucco Company is located in eastern Yolo County, west of the Sacramento River. The area surrounding the site is largely industrial. To the north, there is a truck maintenance yard and railroad siding. On the east are a parking lot used by the Sacramento River Cats, Raley Field Baseball Stadium and a warehouse transfer station used for aluminum can recycling. The adjoining properties to the south are occupied by an off-ramp from the Capitol City Freeway/Highway 50. The nearest residential area to the site is the Casa Mobile Park, about 0.5 to 0.7 miles to the northwest. Southport Elementary School is roughly 0.75 miles to the west. The Site Vicinity USGS Topographic Map is attached as Figure 1, and an aerial photo of the site is attached as Figure 2.

2.1.1 Site Name and Address

Sacramento Stucco Company
860 Riske Lane
W. Sacramento, CA 95961-2803

2.1.2 Contact Person, Mailing Address and Telephone Number

Mr. Buzz Winchell
Property Owner
Sacramento Stucco Company
860 Riske Lane
W. Sacramento, CA 95961-2803
(916) 372-7442

2.1.3 EPA Identification Number and Cal Sites Database Number

Site ID	Site Name	Address	City	ZIP	County	Status
60000284	Sacramento Stucco Co.	860 Riske Lane	West Sacramento	95961	Yolo	VCP

2.1.4 Assessor's Parcel Number(s) and Maps

The property at 860 Riske Lane is located on Yolo County parcels numbered 058-310-18 and 058-310-19. An Assessor's Parcel Number map is attached as Figure 3.

2.1.5 Ownership

Mr. Buzz Winchell owns the property at 860 Riske Lane, West Sacramento, CA 95961-2803.

2.1.6 Township, Range, Section and Meridian

The Site is located in Township 9 North, Range 4 East, Section 32, of the Mt. Diablo Meridian and Baseline.

2.2 Operational History and Status

The history of the northern parcel Number 058-310-18 prior to 1973 is unknown at this time. The southern parcel, Number 058-310-19, originally belonged to the railroad and was purchased and developed by Sacramento Stucco some time after the purchase of the northern parcel.

The northern parcel was occupied by C&S Battery and Lead Company between 1973 and 1978. C&S reclaimed lead alloy from lead-acid batteries and likely contaminated the property during this process. In the late 1970s, several employees of C & S Battery

were diagnosed with having elevated lead levels in their blood. The initial investigation of the site began in 1979 when C&S began testing and removing contaminated soil.

The CDHS collected 10 samples from the site and adjacent properties on May 4, 1979 and 31 additional samples on May 22, 1979 (CDHS, 1979). Lead over 1,000 mg/Kg was detected in many of the samples.

On the adjacent railroad properties 22 samples were collected for the railroad by IT Corporation on July 19, 1979. Lead was detected in surface soils ranging from 12 mg/Kg to 32,000 mg/Kg (ITC, 1979).

About 557 cubic yards of lead-impacted soil were taken to Forward Landfill (Table 1) in an effort to reduce lead levels to below the cleanup criterion of 1,000 mg/Kg applicable at the time. Lead concentrations in four post-excavation confirmation samples ranged from 91 mg/Kg to 1,590 mg/Kg (CDHS, 1981). On March 21, 1981, CDHS issued a *No Further Action* letter for the site.

2.2.1 Underground Storage Tanks

On January 29, 1993, Sacramento Stucco contracted with Tank Project Engineering (TPE) to conduct tank closure activities and to remove two USTs: a 4,000 gallon gasoline tank and an 8,000 gallon diesel tank. On February 2, 1993, TPE submitted a tank closure application to the Yolo County Public Health Department, Environmental Health Division. The application was approved on the same day.

On March 10 and 11, 1993, TPE supervised tank removal activities. JKH construction and AAA Crane, Inc. were subcontracted to perform tank excavation and removal. The tanks were excavated and removed from the tank pit. Upon removal, the tanks were visually inspected by Ms. Paula Myers of the YCPHD-EHD for evidence of leakage or holes. Both tanks were single-walled and made of steel. Both tanks appeared to be in good condition with only minor corrosion and no evidence of leakage. Groundwater was not encountered during the excavation.

Under the supervision of Ms. Paula Myers of the YCPHD-EHD, four excavation soil samples and one dispenser soil sample were collected. These samples were analyzed for: total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), benzene, toluene, ethylbenzene, xylenes (BTEX) and organic lead. The soil sample taken from under the center of the tank dispenser revealed elevated levels of TPHg and BTEX. Organic lead was not detected in any sample.

Based on these soil sampling results, TPE concluded that presence of the petroleum constituents might be the result of gasoline leakage at the dispenser location. BTEX detections in multiple samples were likely the result of over spillage during refueling or vapor dispersion from the dispenser area. TPE prepared a work plan to over-excavate the discrete areas of petroleum-impacted soils. YCPHD-EHD approved the work plan on April 13, 1994.

On September 25, 1994, EBA Wastechnologies implemented the approved work plan and performed an over-excavation near the former dispenser island. The total depth of the over-excavation reached nine feet bgs. Confirmation soil samples from the bottom and sidewalls of the over-excavated former tank pit area were collected and analyzed. Results of the confirmation samples indicated that all analyzed constituents were below their respective detection limits.

Approximately 16 cubic yards of additional soil was stockpiled and remediated by aeration. Soil samples collected from the soil stockpile for characterization purposes indicated that all analyzed constituents were below their respective detection limits.

Based on these data and their oversight of the entire UST excavation project, YCPHD-EHD issued a *No Further Action* letter on February 27, 1995.

2.2.2 Lead in Soil

Phase I and Phase II Environmental Site Assessments were conducted by ENGEO Inc. on December 7, 2005 and January 20, 2006. As part of the Phase II work, ENGEO conducted soil sampling for lead on June 29, 2005 and reported the results on July 29,

2005. A second round of sampling was conducted on January 12, 2006.

The most recent environmental investigation by RBDI was conducted in order to determine that the areas slated for redevelopment did not contain lead above the CHHSL for residential land use. A Workplan for Soil Sampling was prepared by RBDI on July 17, 2006 to further characterize lead contamination at the site. This Soil Sampling Workplan was approved by the DTSC August 7, 2006.

Sampling consisted of 20 targeted sample boreholes, and 10 random sample boreholes, with each hole producing four samples (collected from 1 foot, 2 feet, 3 feet and 5 feet bgs). Each sample was analyzed for lead and pH. Sampling occurred on September 7 and 8, 2006.

Additionally, eleven samples were selected, with concurrence of the DTSC, to be tested for the CAM-17 suite of metals. With the exception of one elevated arsenic detection (31 mg/kg) at one random sampling location (RS-3 at 1 foot bgs) and one elevated antimony detection (39 mg/Kg) at one targeted sampling location (TS-1 at 1 foot bgs), none of the eleven samples contained any CAM-17 metal above California residential exposure CHHSLs.

Targeted soil samples on the northern parcel revealed lead levels over the residential soil CHHSL of 150 mg/Kg but mostly less than 1,000 mg/Kg. Of the 120 soil samples analyzed, 25% of samples had lead at or above 150 mg/kg. Sixteen contiguous sample locations over most of the northern parcel had lead over 150 mg/Kg to a depth of one to five feet.

Random soil samples on the southern parcel did not contain lead above 150 mg/kg.

Except for the single detection of arsenic at 31 mg/Kg, all other arsenic concentrations ranged from a minimum of 3.6 mg/Kg to a maximum of 9.6 mg/Kg and represent the range of site-specific background concentrations. As discussed in later in this RAW, the arsenic “hot spot” will be excavated during the implementation of the RAW and verification sampling performed to ensure that arsenic levels do not exceed the range of 3.6 to 9.6 mg/Kg at any location.

Antimony was detected at TS-1 at 1 foot depth at 39 mg/Kg, above the CHHSL of 30 mg/Kg. Lead at this location was 9,200 mg/Kg. As will be discussed later, a small amount of antimony is used in lead alloy for lead-acid batteries and it is to be expected that antimony will be above CHHSL at locations where lead concentration is highest but unlikely elsewhere. As with arsenic, this antimony hot spot" will be excavated during implementation of this RAW and verification sampling performed to ensure that antimony concentrations remaining in site soils are below the residential CHHSL of 30 mg/Kg.

2.3 Topography

Sacramento Stucco Company is located within the Sacramento Valley, and is surrounded by mostly flat land. The Sacramento River is to the east of the site, and soil at the site is derived from river deposits, containing mostly sand and silt. The site is approximately 25 feet above mean sea level (amsl).

2.4 Geology and Hydrogeology

2.4.1 Site Geology and Soil Types

Sacramento Stucco Company is located inside a meander loop of the Sacramento River. The area is a point bar deposit of poorly graded (well sorted) channel sand. The property is located within the Yolo Basin, and soil onsite is composed of unweathered gravel, sand, and silt. These sediments are deposited by the Sacramento River from the river systems that drain the Coast Ranges, Klamath Mountains, and Sierra Nevada of the Sacramento Valley watershed.

The Sacramento Valley is a basin bounded to the west by the Coast Ranges and to the east by the Sierra Nevada. The floor of the basin consists of granitic, schistose and slaty rocks, of pre-Cretaceous age, which are also found within the Sierra Nevada and the Coast Ranges. The bedrock is overlain by Cretaceous age sandstones and shales.

Older alluvium found within the basin is of Pleistocene and possibly late Pliocene age (Bryan, 1923).

Logs prepared from soil borings drilled during sampling on September 7 and September 8, 2006 show that the majority of soil at the site consists of poorly graded sand with low levels of silt and gravel. Soil found in the northern portion of the site featured higher levels of silt (15 to 70%) between 1 and 3 feet bgs.

2.4.2 Site Hydrogeologic Settings

The Sacramento River meanders around the site, and can be located to the north, east, and south of the site within a few miles. The River is approximately 0.4 miles from the site to the east and south, and roughly two miles directly north. The site is drained by the Sacramento River, which continues to the southwest becoming part of the larger Sacramento Delta system.

Groundwater was not encountered during UST excavation or during soil borehole drilling. ENGEO reported that groundwater in the vicinity of the site is approximately between 10 and 32 feet bgs, based on public well data from wells within the area. Groundwater elevation should be approximately the same as the elevation of the Sacramento River.

2.5 Surrounding Land Use and Sensitive Ecosystems

The area around 860 Riske Lane is industrial. Land to the north contains a railroad siding, vacant land and a truck maintenance yard. The Sacramento River Cats Raley Field baseball stadium and a Transfer Station used for aluminum can recycling are to the northeast (downwind of the prevailing wind direction). The adjoining properties to the south are occupied by an off-ramp from the Capitol City Freeway/Highway 50, truck trailer and shipping container storage. On the west, the site is bounded by a railroad siding and vacant land. The nearest residential dwellings are in the Casa Mobile Park roughly 0.5 to 0.7 miles northwest of the site.

The Sacramento River Cats baseball season is March 29 to August 30. If possible, we

will avoid working during that period due to expected traffic congestion in the area.

2.6 Meteorology

Prevailing winds for the city of West Sacramento are from the southwest at an average speed of 8.5 miles per hour (the "Delta Breeze"). A Sacramento-Yolo Wind Rose is attached as Figure 4. The City receives an average precipitation of 17.2 inches per year distributed among the months of the year as follows:

Month	***Average Temperature ˚F***	***Average Precipitation Inches***
January	45	3.7
February	50	3.0
March	53	2.4
April	58	1.1
May	65	0.5
June	71	0.2
July	75	---
August	74	0.1
September	71	0.3
October	64	0.9
November	53	2.2
December	45	2.9

2.7 Regional Radon Information

Radon is a naturally occurring colorless, odorless and tasteless radioactive gas that forms in soils from the decay of trace amounts of uranium that are naturally present in soils. The public health concern associated with naturally occurring radon is from its accumulation in indoor air and from long –term inhalation of the radon in indoor air. Radon is not expected to be a health concern during outdoor construction activity. USEPA has classified Yolo County as Zone 1 with respect to Radon and it is not expected to be an issue at this site.

2.8 Previous Site Actions

2.8.1 Phase I Environmental Site Assessment

ENGEO Inc. submitted a Phase I Environmental Site Assessment on December 7, 2005 to Sun Valley Land Development Company (ENGEO, December 7, 2005).

2.8.2 Lead Survey

The initial lead survey of the site was performed by the Air and Industrial Hygiene Laboratory of the CDHS on May 22, 1979 (CDHS, 1979) This survey detected lead in surface soils at concentrations as high as 32,000 mg/Kg in the northwestern portion of the site. Approximately 557 cubic yards of soil were removed from the site to reduce lead levels at the site to the cleanup criterion of 1,000 mg/Kg lead applicable at the time. Confirmation soil sampling after excavation revealed lead levels to be between 91 and 1,590 mg/Kg (CDHS, 1981).

Following the removal action, the California Department of Health Services issued a *No Further Action* letter for the site (CDHS, 1980b and CDHS, 1981).

Between 1993 and 1995 when two USTs were removed from the site, soil from the tank pit and former dispenser area was sampled for organic lead. All samples came back below the detection limit of 5.0 mg/Kg for lead. On February 27, 1995 the Yolo County Public Health Department, Environmental Health Division issued a *No Further Action* letter for the UST site.

On June 29, 2005 as part of environmental due diligence for a possible sale of the property, ENGEO collected nine soil samples from nine locations onsite (SB1 to SB9). Each sample was taken from zero to six inches bgs. Each sample contained lead higher than 150 mg/Kg, with the range of 174 mg/Kg to 1,520 mg/Kg. On January 12, 2006 ENGEO returned to the site to sample a total of 12 locations, collecting a total of 28 samples (B1 to B12). Eleven of the 12 locations produced two samples each, taken from zero to six inches bgs and 30 to 36 inches bgs. The remaining location was

sampled every six inches starting at the surface to 36 inches bgs. Eight of the 28 samples contained lead above 150 mg/Kg. Seven of the eight samples with these elevated lead levels were found in the northern parcel (B4 to B7). Sampling locations and results are displayed in Figure 5.

On September 7 and 8, 2006, 120 soil samples were taken from 30 bore holes at the site by RBDI in accordance with a DTSC-approved Workplan. Twenty locations were targeted, meaning that they were selected within an area believed to be contaminated with lead, and the remaining 10 locations were randomly selected, designed to characterize portions of the site which had not been previously sampled (mainly the southern parcel). Each location produced a total of four samples, taken from one foot, two feet, three feet, and five feet bgs.

Targeted soil samples on the northern parcel revealed lead levels over 150 mg/Kg but mostly less than 1,000 mg/Kg. Of the 120 soil samples analyzed, 25% of samples had lead at or above 150 mg/Kg. Lead levels were detected throughout the site at each sampling depth. Sixteen contiguous sample locations over most of the northern parcel had lead over 150 mg/Kg to a depth of one foot to five feet.

Random soil samples from the south parcel did not contain lead above 150 mg/Kg. As expected from previous sampling events, contamination is limited to the northern parcel where C&S Battery operated. Results and locations for targeted sampling are shown in Figure 6. One soil sample contained antimony (TS-1-1 feet, 39 mg/Kg) above the residential CHHSL of 30 mg/Kg (Table 4). Results and locations for randomized sampling are shown in Figure 7. Table 1 has all sampling results for lead and pH. One sample contained arsenic at 31 mg/Kg, clearly elevated above the other arsenic samples which ranged from 3.6 to 9.6 mg/Kg.

2.8.3 Preliminary Endangerment Assessment

The site is occupied by large warehouses, production buildings, offices, and retail facilities built on concrete tension slab foundations. Parking areas are paved with asphalt. There is therefore very little, if any exposure to contaminated soils.

The northwestern edge of the property does feature exposed soil in some areas, but only one RBDI sample location of this exposed soil area returned an elevated lead level over 150 mg/Kg (TS-6 sample from 0 to 1 foot bgs; lead concentration of 350 mg/Kg, Figure 6).

A formal Preliminary Endangerment Assessment (PEA) is not required to be submitted to the DTSC since the proposed RAW recommends the DTSC default CHHSL as the cleanup criterion and DTSC has approved this as a PEA by letter dated March 15, 2007 (DTSC, 2007, Appendix A).

2.8.4 Supplementary Site Investigation

Eleven samples from the September 7 and 8, 2006 sampling event were selected, with DTSC concurrence, to be tested for the CAM-17 list of toxic metals to determine if the site may contain any other elevated CAM-17 metals aside from lead. Eight selected samples came from the targeted sample set, and the remaining three came from the random sample set.

One sample from the random sample set (RS-3) contained arsenic at 31 mg/Kg. This is likely due to the proximity of railroad ties preserved with chromated copper arsenate. The CHHSL for arsenic is 0.07 mg/Kg which is below background level. Krauskopf (1979) reported that the average abundance of arsenic in shale is 10 mg/Kg, in granite is 1.5 mg/Kg, and in basalt is 2 mg/Kg. Background arsenic concentrations in California up to 11 mg/Kg have been reported (Bradford *et al.,* 1996). Aside from RS-3, arsenic concentrations ranged from a minimum of 3.6 mg/Kg to a maximum of 9.6 mg/Kg and represent a site-specific background concentration range. In any event, the arsenic “hot spot” of 31 mg/Kg will be excavated and soil samples collected by step-out borings to ensure that remaining soils do not contain arsenic above the range of 3.6 to 9.6 mg/Kg.

One sample from the targeted sample set (TS-1) contained antimony at 39 mg/Kg, which is above the CHHSL level of 30 mg/Kg (CalEPA, 2005). This was coincident with a lead result of 9,200 mg/Kg. Since antimony is commonly used from 0.5% to 2% by

weight in lead alloy in lead-acid batteries, we expect to antimony elevated above background at locations where lead concentration is high. Where lead concentration is high enough, antimony may be above its CHHSL. Since the CHHSL for antimony is 30 mg/Kg and the maximum reported amount of antimony in lead is 0.5%, then one would expect antimony to be above the CHHSL where lead exceeds 6,000 mg/Kg.

The remaining samples did not contain CAM-17 metals concentrations above CHHSLs or elevated above expected background level. Results for all CAM-17 metals are included in Table 3.

3.0 NATURE, SOURCE, AND EXTENT OF CONTAMINANTS

3.1 Type and Location of Contaminants

Lead has been detected at the site between zero and five feet bgs. Detections of lead above the CHHSL of 150 mg/Kg are restricted to the northern parcel, and the number of detections is greater from zero to three feet bgs (27 of a total of 30 detections) than at five feet bgs. Detections of elevated lead at each depth can be found in Table 2. Lead detected at five feet bgs was found in two areas, in the vicinity of TS-16, TS-18 and TS-19 (the former location of the discarded battery acid neutralization sump) and in TS-4 (near the former lead smelter).

Lead is typically mobilized in soil with a pH less than 5 (ATSDR, 2005), so it makes sense that the lead penetrated the soil the deepest at the location of the former acid neutralization sump.

Lead was detected on the southern parcel at or above 150 mg/Kg in two samples. Lead was detected at sample location B8 (Figure 5) in a surface sample (0-6 inches) in the northeast corner at 240 mg/Kg, and at RS-6 at 1 foot bgs at 150 mg/Kg in the southwest corner (Figure 7). These detections appear to be random and of very limited extent. During removal operations, step-out sampling using a hand-held X-ray fluorescence (XRF) instrument will be performed at these locations and soil will be removed accordingly. Figure 10 illustrates planned soil removal in the vicinity of sample location B8. Soil at and around RS-6 will also be removed and step-out sampling performed even though this sample had lead at 150 mg/Kg at 1 foot bgs.

Arsenic was detected at 31 mg/Kg one location within 0 to 1 foot bgs (TS-6). This sampling location was on the northwestern boundary of the site along the railroad spur. Arsenic concentration is statistically unrelated to lead concentration. Arsenic is mobilized in soil with a high pH. The aboveground storage tank containing ammonium hydroxide was located in the vicinity of TS-17, where arsenic concentration was actually at the low end of the observed range at 3.8 mg/Kg. As noted elsewhere in this RAW the

arsenic “hot spot” will be excavated and step-out sampling performed to ensure that any remaining arsenic is within the site-specific background range of 3.6 to 9.6 mg/Kg.

Antimony exceeded the CHHSL at one targeted sampling location (TS-1) where lead concentration was 9,200 mg/Kg. One would expect that if antimony had also been analyzed at TS-3 at 2 feet bgs where lead was 19,000 mg/Kg, antimony would likewise exceed the CHHSL. Lead concentration can serve as a surrogate for antimony. In other words, as antimony was a minor or trace constituent of lead alloy in the recycled batteries, we can expect to find antimony above the CHHSL only at locations where lead is the highest (Wohl, et al., 1996).

3.2 Extent and Volume of Contamination

The site is comprised of two parcels, 058-310-18 and 058-310-19, and consistently elevated levels of lead in soil were only found in the northern parcel, number 058-310-18. This parcel is 1.16 acres, or approximately 50,530 square feet. Using sampling data, it is estimated that the amount of soil that will need to be removed is roughly 2,300 cubic yards (cy) or about 128 25-ton (18 cy) truck loads. The amount of soil to be excavated may increase or decrease based on conditions encountered in the field during excavation of the lead-impacted soils and on verification sampling results using the XRF. We think a volume of soil about equal to that already removed in 1980 needs to be excavated to 5 feet depth in the vicinity of the former battery acid neutralization pit and directly under the old battery building. However, most of the volume of soil to be removed on the property is within the top one foot. This appears to be necessary because soil contaminated with lead greater than 150 mg/Kg and less than 1,000 mg/Kg appears to have been used to grade the property after removal of soil with lead greater than 1,000 mg/Kg.

The arsenic “hot spot” is roughly where the two parcels meet, on the western side of the site. It is estimated that roughly 5 cubic feet or 0.20 cubic yards will need to be removed to eliminate this “hot spot” of elevated arsenic. Following excavation of the 31 mg/Kg hot spot, step-out soil sampling will be performed to ensure that any arsenic remaining in site soils is within the range of 3.6 mg/Kg to 9.6 mg/Kg, the site-specific

background arsenic range.

3.3 Health Effect of Contaminants

The chemicals of potential concern at this site are lead, antimony and arsenic.

3.3.1 Lead

Exposure to lead may lead to several acute and chronic effects, depending on amount and length of exposure. Chronic exposure to lead may have an impact on blood, leading to anemia, or may have a negative effect on one's nervous system. At the present time, the EPA has not established a reference concentration or reference dose for elemental or inorganic lead. Although studies have been inconclusive linking lead exposure to cancer, the EPA considers lead to be a group B2, probable human carcinogen (ATSDR, 2005).

3.3.2 Antimony

Acute (short-term) exposure to antimony by inhalation in humans results in effects on the skin and eyes. Respiratory effects, such as inflammation of the lungs, chronic bronchitis, and chronic emphysema, are the primary effects noted from chronic (long-term) exposure to antimony in humans via inhalation. Human studies are inconclusive regarding antimony exposure and cancer, while animal studies have reported lung tumors in rats exposed to antimony trioxide via inhalation. EPA has not classified antimony for carcinogenicity.

Antimony is alloyed with other metals such as lead to increase its hardness and strength; its primary use is in antimonial lead, which is used in grid metal for lead acid storage batteries. Other uses of antimony alloys are for solder, sheet and pipe, bearing metals, castings, and type metal. Antimony oxides (primarily antimony trioxide) are used as fire retardants for plastics, textiles, rubber, adhesives, pigments, and paper.

The only acute effects reported from short-term exposure to antimony by inhalation in humans are effects on the skin and eyes.

(http://www.epa.gov/ttnatw01/hlthef/antimony.html).

3.3.3 Arsenic

Arsenic and arsenic-containing compounds are human carcinogens. Exposure to arsenic occurs occupationally in several industries, including mining, pesticide, pharmaceutical, glass and microelectronics, as well as environmentally from both industrial and natural sources.

General health effects that are associated with arsenic exposure include cardiovascular and peripheral vascular disease, developmental anomalies, neurological and neurobehavioral disorders, diabetes, hearing loss, fibrosis, hematological disorders (anemia, leucopoenia and eosinophilia) and multiple cancers: significantly higher standardized mortality rates and cumulative mortality rates for cancers of the skin, lung, liver, urinary bladder, kidney, and colon in many areas of arsenic pollution (Tchounwou, 2003: Wasserman *et al*., 2004).

Because of the ubiquity of naturally occurring arsenic in soils, the regulatory thresholds are typically established based on site-specific background concentrations. It is our goal to remove any arsenic over the range of naturally occurring site-specific background arsenic level of 3.6 mg/Kg to 9.6 mg/Kg.

3.4 Targets Potentially Affected By the Site

Targets potentially affected are employees and customers of Sacramento Stucco, although as noted earlier in this RAW, all of the elevated lead, antimony and arsenic detections, with the exception of two locations, are under pavement, or under concrete slab building foundations. Thus, human exposure is not likely, except during the brief period when the impacted soils will be excavated and disposed. Dust suppression measures during removal of the impacted soils in conjunction with air monitoring will minimize any actual human exposure to toxic metals. Also, Sacramento Stucco will have ceased its operations when remediation occurs. This will further reduce the likelihood of worker exposures to metals in impacted soils.

The Preliminary Endangerment Assessment (PEA) approval letter is in Appendix A.

3.5 Additional Site Investigation

No additional site investigation is planned.

4.0 RISK EVALUATION AND PROPOSED CLEANUP GOALS

4.1 Risk Evaluation

The risks to human health from potential exposure to lead in soils at the site were evaluated based on sampling data performed by ENGEO and RBDI in 2005 and 2006. The site is known to have lead contamination as high as 19,000 mg/Kg within the soil, and contamination is at least as deep as five feet bgs in specific locations. Antimony may be present above the CHHSL in locations where lead concentration is highest. This site also has an arsenic “hot spot” of 31 mg/Kg at TS-6 at 0 to 1 foot bgs. Risk is present at the site through exposure to lead, antimony and arsenic contaminated soil which at present is minimal since the entire property is paved. The contaminated soil will be temporarily exposed during excavation, although contact with the soil and excavation area will be limited by the use of administrative controls, engineering measures, and personal protective equipment. After all impacted soil is removed from the site, confirmation sampling will assure that all lead onsite is below the 150 mg/Kg threshold, antimony is below the 30 mg/Kg threshold, and arsenic onsite is within the 3.6 to 9.6 mg/Kg naturally occurring site-specific background range.

4.1.1 Human Health Screening Risk Evaluation

The lead threshold used for this site will be 150 mg/Kg as defined by the California Human Health Screening Levels for Soil (CHHSLs) intended for residential land use (Cal EPA, 2005).

The antimony threshold used for this site will be 30 mg/Kg as defined by the California Human Health Screening Levels for Soil (CHHSLs) intended for residential land use (Cal EPA, 2005).

Confirmation sampling from step-out soil samples will ensure that any arsenic above the range of 3.6 to 9.6 mg/Kg is excavated and disposed offsite in a regulated landfill. Arsenic will be removed from one “hot spot” at TS-6 where arsenic is 31 mg/Kg and

confirmation sampling performed as with the other metals.

4.1.2 Environmental Screening Risk Evaluation

Lead is not considered mobile in soil due to low solubility unless the soil pH is below about 5 to 5.5 (Ganguly et al., 1998; ATSDR, 2005). At the time C & S Battery was operating from 1973 to 1978, pH would have been highly variable, ranging from the spent battery sulfuric acid at a pH of 1 to the ammonium hydroxide used to neutralize the acid at a pH of 11.6.

The sampling events which occurred on September 7 and 8, 2006 produced pH data for each sampling location, and for each depth at which a sample was taken. The average pH for all samples was 8.3, although some pH detections less than 7.0 were encountered (lowest being 5.9 and highest being 12). It appears from the pH range observed at the site that the basic solution used to neutralize battery acid has had a lasting effect and that effect is to immobilize lead.

A graph of pH vs. lead concentration shows that lead migration in the soil does not appear to be occurring on site, as concentration values are roughly uniform along the pH range (Figure 8). Figure 9 displays the lead concentrations at each sampling depth, and displays that lead is mostly uniform at all sampling depths.

These plots suggest that the lead detected below about 1 foot bgs may have originated from use of fill soil containing elevated lead rather than through any leaching of lead through the soil column, particularly in the vicinity of the former USTs. This is consistent with the fact that soil contaminated below 1,000 mg/Kg lead was used the backfill the soil with lead greater than 1,000 mg/Kg excavated from the site in 1981 under CDHS oversight.

4.2 Endangerment Determination

All previous work performed at the site, from sampling to UST removal, has been overseen by Yolo County, the CDHS Hazardous Materials Management Section and the DTSC. All current sampling results and site information has been submitted to the DTSC.

4.3 Proposed Cleanup Goals and Hazardous Waste Classification Criterion

As noted above, the Proposed Cleanup Goal for lead is 150 mg/Kg, the residential exposure CHHSL. The antimony cleanup value is also its residential CHHSL of 30 mg/Kg. For arsenic, the cleanup of the "hot spot" will be done so that the remaining soils contain arsenic within the site-specific background range of 3.6 to 9.6 mg/Kg. According to Title 22 (66699) of the California Administrative Code, Division 4 Environmental Health, Chapter 30: Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes: (extract)

(a) Any waste is a hazardous waste which contains a substance listed subsections (b) or (c) of this Section:

(1) At a concentration in milligrams per liter as determined pursuant to Section 66700 which exceeds it's listed Soluble Threshold Limit Concentration (STLC), or its listed Total Threshold Limit Concentration (TTLC).

(b) CoCs are listed with corresponding TTLC and STLC values as given below:

	TTLC (mg/kg)	***STLC (mg/L)***
Lead	*1,000*	*5.0*
Arsenic	*500*	*5.0*
Antimony	*500*	*15.0*

These TTLC and STLC are criteria used to determine whether soil containing lead is hazardous for purposes of disposal in a regulated landfill. See Appendix I.

5.0 ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)

The purpose of this Section of the RAW is to identify and screen possible removal action alternatives that may best achieve the proposed cleanup levels discussed in Section 4.0. The removal action at the site has been determined to be a non-time-critical removal because the release or threat of release of contaminants is not critical based on the human health risk evaluation and site considerations. However, in the interest of public health, it is proposed that the removal action take place between September and October of this year.

The screening of the removal action alternatives was conducted in general accordance with the USEPA document, *Guidance on Conducting Non-Time Critical Removal Actions under CERCLA (US EPA, 1993)*. Accordingly, the removal action alternatives were screened and evaluated based on their effectiveness, implementability and cost.

5.1 Removal Action Scope

This RAW covers all soil contamination due to lead, antimony and arsenic on the property located at 860 Riske Lane.

The current estimated volume of soil proposed for removal is estimated to be about 2,000 cubic yards based on the analytical data gathered during the recent site investigations.

The goals and objectives of the proposed removal action are presented in Section 1.1. The Proposed Cleanup Goal is 150 mg/Kg for lead, 30 mg/Kg for antimony and above a range of 3.6 to 9.6 mg/Kg for arsenic.

Each of the removal action alternatives is screened based on effectiveness, Implementability, and cost, as defined below:

- Effectiveness – This criterion focuses on the degree to which a removal action

reduces toxicity, mobility, and volume, minimizes residual risk, affords long-term protection and minimizes short-term impacts. It also considers how quickly the removal action achieves overall protection of human health and compliance with Applicable or Relevant and Appropriate Requirements (ARARs) (Appendix C).

- Implementability – Removal actions are evaluated with respect to technical feasibility and applicability to site conditions. Some examples of this criterion include the ability to obtain necessary permits, regulatory approval of remedial actions, availability of necessary equipment and skilled workers, and acceptance by the State and the community.

- Cost – This criterion relates to the relative cost screening bases on approximate capital and operational maintenance costs.

Screening of several technology types using the above criteria was conducted to select removal actions for further evaluation. Based on this screening, the three removal actions identified and developed are:

- Alternative 1 – No Action
- Alternative 2 – Onsite Soil Washing
- Alternative 3 – Excavation and Offsite Disposal

Each of these removal action alternatives is described in Section 5.2

5.2 Evaluation of Removal Action Alternatives

Each removal action alternative was independently analyzed without consideration to the other alternatives. This analysis addressed the criteria listed below:

- Short-Term Effectiveness – This criterion evaluates the effects of the remedial alternative during the construction and implementation phase until remedial

objectives are met. It accounts for the protection of workers and the community during remedial activities and environmental impacts from implementing the remedial action.

- Long-Term Effectiveness and Permanence – This criterion addresses issues related to the management of residual risk remaining onsite after a remedial action has been carried out and has met its objectives. The primary focus is on the controls that may be required to manage risk posed by treatment residuals and/or untreated wastes.

- Reduction of Toxicity, Mobility, or Volume – This criterion evaluates whether the remedial technology employed results in significant reduction in toxicity, mobility, or volume of the hazardous substances.

- Implementability – This criterion evaluates the technical and administrative feasibility of the alternatives, as well as the availability of the necessary equipment and services. This includes the ability to design and perform a remedial alternative, ability to obtain services and equipment, ability to monitor the performance and effectiveness of technologies, and the ability to obtain necessary approvals from agencies, and acceptance by the State and the community.

- Overall Protection of Human Health and the Environment – This criterion evaluates whether the remedial alternative provides adequate protection to human health and the environment.

- Cost Effectiveness – This criterion assesses the relative cost of each technology based on estimated fixed capital for construction or initial implementation and ongoing operational and maintenance costs. The actual costs will depend on true labor and material cost, competitive market conditions, final project scope, and the implementation schedule.

5.2.1 Alternative 1 – No Action

The No Action alternative has been included to provide a baseline for comparisons among other remedial alternatives. This action includes no institutional controls, no treatment of soil, and no monitoring.

The No Action alternative would not require implementing any measures at the site, and thus no costs would be incurred. Consequently, there would be no activities that would disturb site soil, and therefore, no short-term risks to site workers or the community as a result of implementing this alternative.

However, under the No Action alternative, the impacts due to the presence of lead above the residential CHHSL in soil would not be addressed and there would be no reduction in the potential risks. This alternative, therefore, does not meet the long-term effectiveness or permanence criteria. The No Action alternative also would not result in reducing the toxicity, mobility, or volume of lead present in site soils. In addition, this alternative does not meet the criterion of overall protection of human health and the environment. As a result, acceptance by the State and the community would likely not be obtainable and the property could not be re-developed.

5.2.2 Alternative 2 – Onsite Soil Washing

This alternative would require the assembly of a soil washing system, and allow the majority of contaminated soils to be treated onsite. A “scrubbing” unit would separate and remove most, if not all, lead from contaminated particles of soil. Any soil found to be contaminated after being washed would have to be transported offsite to a disposal facility. Confirmation soil sampling and analysis would be conducted to verify that all cleanup criteria were met at the excavation pit floor and around its perimeter.

Soil washing is a method to reduce the volume of waste while increasing its concentration (Cline *et al.,* 1995). Since it is very difficult to wash soil from clay particles, for which they have a high affinity, the soil is first screened to separate sand from fine soil particles. The fine-grained soil is tested and disposed as hazardous waste

if so indicated by testing data. The remaining coarse-grained soil is washed with acidified water to remove lead contamination, and the lead is then chelated from the water using the chelation agent EDTA. The chelated sludge is disposed of at an offsite regulated landfill and the clean soil is then used as fill in the excavated area.

Soil washing may require an additional designated area for soil stockpiling, prior to and after treatment. A summary of the assessment of this alternative for each of the screening criteria is provided in this Section.

Short-and-Long-Term Effectiveness

Soil washing would likely require all contaminated soil to be excavated before treatment can occur so that a continuous feed could be maintained. Potential exposure to the chemicals of potential concern (COPC) would arise during soil excavation and during the soil washing process. Depending on the capacity and operating speed of the soil washing system, contaminated soils may need to be stockpiled and stored until they can be treated by the soil washing system.

After all lead-impacted soil has been treated by the soil washing system, all lead will likely have been removed from the site. The lead would either have been stripped by soil washing, or fine-grained soils and precipitated and flocculated sludge containing lead above 150 mg/kg after treatment will have been removed from the site and taken to an appropriate disposal facility. All long-term risks will be eliminated and removal objectives completed.

Reduction of Toxicity, Mobility, or Volume

Treatment of contaminants by soil washing would not lessen toxicity or volume of the COPC, but would nearly eliminate all human exposure to the COPC by placing all remaining impacted soil and waste wash-water in an engineered off-site facility designed to handle and store such waste. Mobility of the lead will be reduced after the remaining waste is transported to a disposal facility.

Implementability

Before onsite soil washing can begin, a system for soil washing needs to be assembled and prepared onsite. Given the amount of contaminated soil, a larger system will need to be used, and would need to be set up in a location easily accessible to transfer soil to and from the system. Depending on what size of a system is found to be practical at the site, treatment of soil may take weeks to months to complete. Acceptance by the State and the community for this alternative is considered moderate.

Overall Protection of Human Health and the Environment

This alternative reduces the potential risks from the exposure to the COPC at the site and accomplishes the RAOs. Consequently, it is considered to be protective of human health and the environment.

Cost Effectiveness

Soil Washing technologies typically involve moderate to high costs. A system to perform the washing would either have to be purchased or rented, and would likely require extra personnel to operate the system. The cost of Soil Washing is approximately $170 to $200 per ton of soil washed. As stated above, not all lead may be stripped from the soil, so additional disposal costs would also need to be considered for this alternative.

The estimated cost for excavation, transportation and disposal of the impacted soils is approximately $125 per ton for disposal at a Class I Landfill and approximately $75/ton for disposal at a Class II landfill, exclusive of permitting fees. The cost to backfill and compact the site after excavation is completed is roughly $45,000. The total volume of soil removed would be reduced as would the amount of backfill required.

<u>5.2.3 Alternative 3 – Excavation and Offsite Land Disposal</u>

The Excavation and Offsite Land Disposal alternative would consist of removing and

transporting impacted soil to an appropriate, permitted Class I hazardous waste landfill or Class II specialized waste landfill facility for disposal. Excavation includes using loaders, backhoes, large diameter augers, and/or other appropriate equipment. Excavation operations may generate fugitive dust. Suppressant foam, water spray and other forms of dust control may be required during excavation, and workers may be required to use personal protective equipment to reduce exposure to lead. The depth of excavations may be limited due to physical constraints associated with the site. Sloping or benching excavation sidewalls may result in increased volume of soil requiring excavation. Confirmation soil sampling and analysis would be conducted to verify that all cleanup criteria were met at the excavation bottom and around its perimeter.

Excavation may require additional area for soil stockpiling, prior to disposal. Depending on the needs of the client, the excavated areas of the site may also need to be backfilled, and compacted. A summary of the assessment of this alternative for each of the screening criteria is provided in this Section.

Short-and-Long-Term Effectiveness

Potential short-term risks to onsite workers, public health and the environment could result from dust or particulates that may be generated during excavation and soil handling activities. These risks could be mitigated using personal protective equipment for onsite workers and engineering controls, such as dust suppression and air monitoring in addition to traffic and equipment operating safety procedures for protection of the surrounding community and to meet all ARARs.

Excavation and disposal would remove the COPC from the site, and therefore eliminate the long-term risks. Importantly, all remedial action objectives would be met.

Reduction of Toxicity, Mobility, or Volume

Although the metals would be removed from the site, excavation and offsite land disposal will not result in the reduction of toxicity or volume of the COPC. By placing the impacted soil in an engineered landfill suitable for receiving the concentrations of lead, antimony, and arsenic, the mobility of the COPC will be reduced.

Implementability

Excavation and offsite disposal is a well-proven readily implementable technology that is a common method for cleaning up metal contaminated sites. It is a relatively simple process, with proven results. Equipment and labor required to implement this alternative are uncomplicated and readily available. The shallow depths of the identified contamination make excavation readily implementable. It is anticipated that regulatory approval would be granted since it is a proven and permanent technology. Acceptance by the State and the community for this alternative is considered high.

Overall Protection of Human Health and the Environment

This alternative reduces the potential risks from the exposure to the COPC at the site and accomplishes the RAOs. Consequently, it is considered to be protective of human health and the environment.

Cost Effectiveness

The estimated cost for excavation, transportation and disposal of the metal-impacted soils is approximately $125 per ton for disposal at a Class I Landfill and approximately $75/ton for disposal at a Class II landfill, exclusive of permitting fees. An estimated cost for backfill and compaction once excavation is completed is $45,000.

This estimate assumes truck transportation. Given the immediate proximity of a rail yard at the site, a possible alternative to be investigated is rail transportation by container to the ECDC Environmental Landfill in East Carbon City, Utah. Cost of rail transportation is estimated to be about $0.30 per ton-mile. The distance from West Sacramento to East Carbon City Utah is about 800 miles. This is a transportation cost of $240 per ton.

5.3 Comparative Analysis of Removal Action Alternatives

A comparative analysis was conducted to identify the advantages and disadvantages of each remedial alternative. This comparative analysis of the remedial alternatives was conducted to address the six criteria listed in Section 5.2.

5.3.1 Short-Term Effectiveness

The No Action alternative does not involve activities that would disturb the impacted soil appreciably. Therefore, there would be no short-term risks to onsite workers or the community as a result of implementing this alternative. The Soil Washing, and Excavation and Disposal alternatives will require removing, handling, and transporting the impacted soil, resulting in higher short-term exposure risks. However, it is expected that these risks can be sufficiently mitigated through control measures and by air monitoring during the removal action, as discussed in Section 5.5 If soil is excavated and immediately loaded and hauled away, as proposed by the the Excavation and Disposal plan, the short term threat is somewhat lower than the soil washing alternative and is therefore favored with regards to short-term risk.

5.3.2 Long-Term Effectiveness and Permanence

Under the No Acton alternative, the impacts associated with the site-specific COPC would not be addressed. Consequently, there would be no reduction in the potential risks and the RAOs would not be achieved. The Soil Washing and Excavation alternatives eliminate potential exposure to the COPC, and therefore, accomplish the RAOs. Both Soil Washing and Excavation and Offsite Disposal alternatives would remove the COPC from the 860 Riske Lane site, and would not require any further management or site controls. For this reason, both Soil Washing and Excavation and Disposal alternatives can be recommended with regard to the long-term effectiveness and permanence.

5.3.3 Reduction of Toxicity, Mobility, or Volume

The No Action alternative does not result in reducing the toxicity, mobility, or volume of the COPC present at the site. Although the COPC will be removed from the site, both the Soil Washing and Excavation alternatives do not result in the reduction of toxicity or volume of the COPC, as both plans transfer the COPC to a permitted landfill. By placing the impacted soil in an engineered landfill suitable for receiving the concentrations of lead, the mobility of the COPC would be reduced. Accordingly, both the Soil Washing and Excavation and Offsite Disposal alternatives can be recommended.

5.3.4 Implementability

No measures would be implemented for the No Action alternative. The Soil Washing and Excavation alternatives are both well-proven, readily implementable technologies. However, Soil Washing requires a greater deal of planning and time to implement, and also requires a greater time span to remove all contaminated soils. Accordingly, the Excavation and Offsite Disposal alternative is favored in this category.

5.3.5 Overall Protection of Human Health and the Environment

This No Action alternative would not result in any reduction in the potential risk associated with the COPC at the site and, therefore, the RAOs would not be achieved. The Soil Washing and Containment and Excavation alternatives both achieve the RAOs and are considered protective of human health and the environment. Both the Soil Washing and Excavation and Disposal alternatives are equally effective in regards to human health and environmental protect, and both alternatives can be recommended.

5.3.6 Cost Effectiveness

A summary of estimated costs to implement the proposed alternatives is presented in Table 5.

5.4 Recommended Removal Action Alternative

Based on the comparative analysis described in Section 5.3, Alternative 3 (Excavation and Offsite Land Disposal) is the preferred and recommended removal action alternative for this site. This alternative was selected because it was determined to be effective, implementable, and cost effective as discussed below. In addition, the components of the preferred removal action alternative are in compliance with the ARARs. The ARARS are discussed in Section 6.0 and summarized in Appendix C.

The overall short-term effectiveness and implementability of this alternative is high. Potential risks include exposure of onsite workers to the COPC during excavation, soil handling, and transport activities. However, these risks are readily mitigated by the proper used of personal protective equipment, adherence to procedures outlined in the Health and Safety Plan, air monitoring, and other engineering controls such as water spraying to mitigate fugitive dust generated during excavation.

The selected technology has a high long-term effectiveness and reliability. The source of the COPC is permanently removed from the Sacramento Stucco site, as will be confirmed by post-excavation soil sampling. Long-term monitoring, sampling, or maintenance will not be required. Acceptance by the State and the community for this alternative is therefore high.

The selected removal action will result in the elimination of toxicity, mobility, and volume of the COPC at the Sacramento Stucco site through excavation and offsite disposal of the lead, arsenic, and antimony impacted soil. Once placed within a suitable engineered landfill, the mobility of the COPC would be contained at the licensed, regulated landfill.

This alternative is deemed most preferable in long and short-term effectiveness categories, and in the overall protection of human health and the environment.

5.4.1 Description of Selected Remedy

Designated Waste:

Lead-impacted soil will be excavated by a front-end bucket loader, stockpiled, then placed in 25 ton, 18 cy dump trucks, and hauled to the appropriate Class I or Class II designated waste landfill depending on the hazardous waste characteristics of the impacted soil. Acceptance criteria are listed in Appendix I.

Hazardous Waste:

The nearest Class I Landfill is near Kettleman City, California. The proposed removal action is estimated to be completed in no more than four weeks. This period of time will include excavation and loading of the impacted soil into transport trucks.

The removal action activities should be conducted before or after the conclusion of the Sacramento Rivercats baseball season. Furthermore, due to the extent of shallow lead contamination as evidenced in Figure 6, the project is likely not feasible until after Sacramento Stucco has relocated to another property and the structures on the current property have been demolished in preparation for redevelopment.

Control measures to be implemented as part of the Health and Safety Plan (Appendix E) are work area control, dust control, traffic control, and air monitoring as described in Sections 7.4, 7.5 and 7.7

The total estimated volume of soil to be removed from the site is approximately 2,000 cubic yards. Expected excavation dimensions are illustrated in Figure 10. Upon completion of the removal action, confirmation soil samples will be collected from the excavated area, as described in Section 7.3.5.

The excavated soils classified as a designated waste will be transported offsite to the Norcal Waste Systems Ostrom Road Class II Landfill in Wheatland or the Hay Road Landfill in Vacaville for disposal. Excavated soil classified as hazardous waste will be transported offsite to the Chemical Waste Management Kettleman Hills Class I Landfill in Kettleman City, California. The Transportation Plan is described in Appendix G.

The excavation will be considered complete when the overall cleanup goal of 150 mg/Kg for lead, 30 mg/Kg for antimony and 3.6 to 9.6 mg/Kg for arsenic is achieved. Depending on the needs of the client, the site may need to be restored to industrial grade, including backfill and compaction. This process will be performed after all confirmation sampling is conducted, and all impacted soil is removed from the site. If it is determined that the site does not need to be backfilled, compacted and restored to original condition, this process and its associated costs can be ignored.

6.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

There are no site-specific ARARs for the COPC, aside from the proposed cleanup levels for lead, antimony and arsenic discussed in this RAW. All ARARs are provided in Appendix C.

6.1 Prior Public Participation Activities

There are no prior public participation activities. A Community Profile has been prepared and is attached here as Appendix B.

6.2 RAW Public Participation

The minimum public participation requirements for the RAW process are specified by the DTSC and include notification of public agencies and the general public of a 30-day comment period on the RAW. The Key Contacts List is in the Community Profile found in Appendix B.

The DTSC will initiate a community survey and fact sheet per DTSC standards. The survey will be mailed to a ¼ mile radius, residents of the Casa Mobile Park and to the Key Contact List. The DTSC will use the results from the survey and contacts to address Community Profile. The profile will contain information on demographics, land use, and community concerns.

DTSC will then make a determination of the level of community concern. Based upon the level of concern, DTSC may require additional participation activities prior to the start of a public comment period on the Draft RAW. Activities include a fact sheet and a public notice.

RBDI will work with DTSC to conduct any additional activities.

6.2.1 Community Concerns

No community concerns have been voiced as of this writing. Any concerns received will be addressed in writing through the DTSC.

6.2.2 Public Participation Plan Implementation

The Public Participation Plan implementation will be facilitated through Ms. Leona Winner and Mr. Nathan Schumacher of the DTSC. The DTSC will be soliciting comments from the community by mail. Any comments received by the DTSC will be passed on to Sacramento Stucco and RBDI for response. All reports and documents prepared in connection with this project will be housed in a repository for the public participation process.

6.3 California Environmental Quality Act (CEQA)

CEQA requires Lead Agencies to evaluate and document the potential environmental impacts of projects they propose to make a decision on or approve. Since DTSC is serving as the Lead Agency for this project, it is subject to CEQA. RBDI will comply with all necessary CEQA requirements as identified by the DTSC.

6.4 Hazardous Waste Management

Waste acceptance criterion is set by the Class II designated waste landfill operated by Norcal Waste Systems on Ostrom Road in Wheatland, California and Hay Road in Vacaville, California and the Class I landfill in Kettleman City, California (Appendix I).

6.5 Yolo Solano Air Quality Management District (YSAQMD)

Dust control requirements are in Rule 2.5 and Rule 2.19 of the YSAQMD (Appendix D). The Dust Control Plan is in Section 7.5.

6.6 Health and Safety Plan (HASP)

All contractors will be responsible for operating in accordance with the most current Occupational Safety and Health Administration (OSHA) regulations including 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, and 29 CFR 1926, Construction Industry Standards, the attached site-specific Health & Safety Plan (Appendix E) as well as other applicable federal, state and local laws and regulations.

6.7 Quality Assurance Project Plan (QAPP)

The quality assurance/quality control measures that will be used during project execution are documented in the Quality Assurance Project Plan (Appendix F). The QAPP will assure that Site field and analytical data collected meet project Data Quality Objectives (DQOs) and RAOs to support decisions for development of the site.

6.8 Others

Any other ARARs are addressed in Appendix C.

7.0 REMOVAL ACTION IMPLEMENTATION

7.1 Site Preparation and Security Measures

7.1.1 Delineation of Excavation Areas

The excavation area will be delineated using "*Suggested Guidelines for Prospective Excavation Site Delineation and Facility Owner Location Markout*" published by Underground Service Alert (USA) of Northern California at http://www.digalert.org.

7.1.2 Utility Clearance

Underground Service Alert (USA) of Northern California will be contacted at least 48 hours prior to excavation at the site.

7.1.3 Security Measures

Appropriate barriers and/or privacy fencing will be installed prior to beginning the excavation process to ensure that all work areas are secure and safe. To ensure trespassers or unauthorized personnel are not allowed near work areas, security measures may include, but are not limited to:

- Posting notices directing visitors to the site manager.
- Maintaining a visitor's log. Visitors must have prior approval from the site manager to enter the site. Visitors shall not be permitted to enter the site without first receiving site-specific health and safety training from the site safety coordinator.
- Installing barrier fencing to restrict access to sensitive areas such as exclusion zones.
- Providing adequate site security to ensure unauthorized personnel have no access to work areas and/or contaminated materials.

- Before leaving the site, all personnel must sign out in the visitor's log.
- Maintaining a safe and secure work area, including areas where equipment is stored or placed, at the close of each workday.

Persons requesting site access will be required to demonstrate a valid purpose for access and provide appropriate documentation to demonstrate they have received proper training required by the site-specific HASP (see Appendix E).

7.1.4 Contaminant Control

Erosion control measures (straw bales), wind fences, and a water truck will be used to control dust and erosion as appropriate.

In order to prevent any potential exposure of material to the existing Sacramento Stucco facilities or equipment, the following measures will be implemented during soil excavation activities:

- Any nearby equipment will be covered with protective plastic sheeting and cleaned after removal activities.
- Adjacent paved areas will be covered with plastic sheeting and pressure washed following the removal activities.
- All doors, windows, air conditioning units and HVAC systems facing the excavation zone will be taped and covered.
- Removal action will be conducted only after the RAW has been approved in writing by DTSC and then after the completion of the 30-day public notice period and in consultation with the DTSC.
- Because strict air monitoring procedures will be implemented during excavation activities, the covering of windows and doors at the Casa Mobile Park is not warranted

or anticipated. Removal action activities will not be conducted during Sacramento Rivercats baseball games or other unfavorable hours reasonably raised by the community concerns. Community members will be informed prior to initiation of any removal activities.

7.1.5 Permits and Plans

The following lists the applicable agencies and permits and/or notification that may need to be notified or obtained, respectively, prior to the initiation of any field activities:

Yolo County

- Environmental Health Department
- Fire Department
- Public Works
- Transportation Division

State of California

- Occupational Safety and Health Administration (OSHA), Department of Industrial Relations – Notification of Excavation Activity
- Yolo-Solano Air Quality Management District (YSAQMD)
- United States Environmental Protection Agency (USEPA), an EPA generator number currently exists for this site, and will be used in association with the transportation of waste off Site.
- Underground Service Alert (USA) of Northern California – AB 73

YSAQMD Rule 2.5 and Rule 2.19 apply to dust control.

Several elements of YSAQMD Rule 2.5 and Rule 2.19, such as protocols for mitigation of potential fugitive dust emissions, have been incorporated into this RAW. Excavation, loading and transport of impacted soils shall be in compliance with YSAQMD Rules 2.5 and 2.19 prevention, reduction, and mitigation measures for fugitive dust emissions. No notification or filing of a Fugitive Dust Emission Control Plan is anticipated due to the project size.

7.2 Field Documentation

The forms generated to document sample collection activities will include the Chain of Custody (CoC), Sample Collection Log (SCL), and Field Activity Daily Log (FADL).

7.2.1 Field Logbooks

Field logbooks will document where, when, how, and from whom any vital project information was obtained. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. Logbooks will be bound with consecutively numbered pages. Each page will be dated and the time of entry noted in military time. All entries will be legible, written in black ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions or other terminology, which might prove inappropriate. If an error is made, corrections will be made by crossing a line through the error and entering the correct information. Corrections will be dated and initialed. No entries will be obliterated or rendered unreadable.

Entries in the field logbook will include at a minimum the following for each fieldwork date:

- Site name and address
- Recorder's name
- Team members and their responsibilities
- Time of Site arrival/entry on Site and time of site departure
- Other personnel onsite
- A summary of any onsite meetings
- Quantity of impacted soils (in terms of RCRA hazardous wastes, non-RCRA hazardous waste, and non-hazardous wastes) excavated
- Quantity of impacted soils (in terms of RCRA hazardous wastes, non-RCRA hazardous waste, and non-hazardous wastes) temporarily stored onsite
- Quantity of excavated soils in truckloads (in terms of RCRA hazardous wastes, non-RCRA hazardous waste, and non-hazardous wastes) transported offsite
- Names of waste transporters and proposed disposal facilities
- Copies or numbers of manifests or other shipping documents (such as bill of landing) for waste shipments
- Quantity of import fill material in truckloads
- Deviations from this RAW and Site HASP

- Changes in personnel and responsibilities as well as reasons for the changes
- Levels of safety protection
- Calibration readings for any equipment used and equipment model and serial number

At a minimum, the following information will be recorded during the collection of each sample:

- Sample identification number
- Sample location and description
- Site sketch showing sample location and measured distances
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (i.e., matrix)
- Type of preservation
- Type of sampling equipment used
- Field observations and details important to analysis or integrity of samples (e.g., heavy rains, odors, colors, etc.)
- Instrument readings (e.g., photoionization detector [PID], etc.)
- Chain-of-custody form numbers and chain-of-custody seal numbers
- Transport arrangements (courier delivery, lab pickup, etc.)
- Recipient laboratory.

7.2.2 Chain-of-Custody Records

The Chain of Custody (CoC) will be generated from the Sample Labels that are typically prepared during sample collection and affixed to the sample containers. Information provided on the CoC includes the sample names, sample descriptions, date and time of collection, container types, sample volumes, preservative and requested analytical testing. The CoC will be generated in the field and accompanied the samples to the laboratory.

7.2.3 Photographs

Photographs will be taken at every excavation area, every sample location, and other areas of interest onsite. They will serve to verify information entered in the field

logbook. When a photograph is taken, the following information will be written in the logbook or will be recorded in a separate field photography log:

- Time, date, location, and, if appropriate, weather conditions
- Description of the subject photographed
- Name of person taking the photograph

7.3 Excavation

7.3.1 Confined Space Entry Requirements

No confined space entry is anticipated. Excavation will follow CAL/OSHA standards. Slopes or benches will be used. A slope of 1½H:1V for excavations shallower than 20 feet deep or a bench cut at every five feet of depth are both considered satisfactory (CAL/OSHA Regulations, Excavation, Trenches, Earthwork, CCR Title 8, Section 1541.1(a) through Section 1541.1(e) Protective Systems).

7.3.2 Temporary Storage Operations

The soil staging process will be monitored to ensure dust is not created. As soil is excavated, it will be temporarily stored at staging areas onsite until offsite transportation and disposal are available. At the staging areas, excavated soil will be placed on an impermeable barrier base (*e.g.*, plastic sheeting) and covered with Visqueen to prevent any run-on and/or dust generation. The staging areas will be bermed to contain any runoff. As an alternate, excavated soils may be placed in covered roll-off bins or drums. The staging area will be placed in the northeast corner of the property in the vicinity of sample TS-1 (Figure 10).

The temporary onsite storage of excavated soil wastes will be secured and properly labeled with hazardous waste signs until offsite transportation and disposal are ready for loading. In no case will the waste storage be longer than 90 days after its generation. Storage of any hazardous waste longer than 90 days after its generation

may require a permit or approval from DTSC. Direct loading may take place concurrently with excavation operations, with access of loaders to the stockpile from outside of the excavation areas, while excavation operations deposit impacted soil from the excavation areas to the staging area.

During non-excavation hours, excavated soil stockpiles will be covered with plastic sheeting or other proper materials. Additional field applications may involve installation of a temporary canopy, liner, or other physical barrier that minimizes movement of materials from the site by wind, water, or any other mechanism.

7.3.3 Waste Segregation Operations

Prior to stockpiling/staging, the excavated soil will be segregated to the extent possible to avoid any mixture of hazardous and non-hazardous soils. This segregation will minimize the amount of hazardous soils generated and its associated disposal cost. The soil segregation will be based upon criteria for hazardous and non-hazardous soils and the available sampling data. RCRA hazardous soils will be transported to a licensed Class I landfill. Non-RCRA hazardous soils will be transported to a licensed Class II landfill.

7.3.4 Decontamination Area

Each piece of equipment used for the excavation will have a clean-out bucket or continuous edge across the cutting face of its bucket. Unless specifically otherwise approved by DTSC for hard or rocky soils, no excavation will be permitted with equipment utilizing teeth across the cutting edge of its bucket.

Entry to the contaminated areas will be limited to avoid unnecessary exposure and related transfer of contaminants. In unavoidable circumstances, equipment or truck will be decontaminated in a designated decontamination area before leaving Sacramento Stucco as follows:

Decontamination Procedures

All equipment or trucks that come into contact with potentially contaminated soil or water will be decontaminated to assure the quality of samples collected and/or to avoid cross contamination. Disposable equipment intended for one time use will not be decontaminated, but will be packaged for appropriate disposal. Decontamination will occur prior to and after each designated use of a piece of equipment or truck. All drilling, sampling, excavating, transporting and storage devices used will be decontaminated using the following procedures:

- Non-phosphate detergent and tap water wash, using a brush if necessary.
- Tap-water rinse.
- Initial deionized/distilled water rinse.
- Final deionized/distilled water rinse.

Equipment will be decontaminated in a pre-designated area on pallets or plastic sheeting, and clean bulky equipment will be stored on plastic sheeting in uncontaminated areas. Cleaned small equipment will be stored in plastic bags. Materials to be stored more than a few hours will also be covered.

7.3.5 Excavation Plan

The initial plan for excavation is to have trucks enter one of the two gates on Riske Lane, receive their load, and then exit the other gate and proceed to the nearby freeway onramp (see Appendix G, Figure 1). The selection of which gate will be used for entry and for exit will be made with the recommendations from the transportation supervisor.

After loading, trucks will pass through the decontamination and inspection station prior to departure from the Site. Transported material will be covered prior to leaving the SSFL property. Trucks will be inspected by the transportation manager before leaving the Site. The inspection will include visual checking of tire conditions, brake pads, latches, properly-secured covering, decontamination, placarding, and hauling documents (manifests). The inspection results will be logged in the daily construction

logs by the transportation manager and made available for inspection at the Site.

Initial Excavation: The initial excavation will be conducted on the northern parcel of the site. The extent of excavation has been determined based on extensive sampling of the site as discussed in Section 3.2 and shown on Figure 10. The excavation will produce an estimated 2,000 cubic yards of material. Additionally, the arsenic “hot spot” will also be excavated removing roughly 5 cubic yards, or 0.20 tons from the specific arsenic detection location. Step-out sampling from this “hot spot” will be performed to ensure removal of all arsenic greater than 3.6 to 9.6 mg/Kg site-specific background range.

Confirmation Excavation: Additional excavation may be necessary depending on the results of confirmation sampling as discussed in Section 7.6.

7.4 Air and Meteorological Monitoring

7.4.1 Air Monitoring

Air monitoring will be performed during all site activities in which contaminated or potentially contaminated materials are being disturbed or handled. RBDI will be onsite and assume the roll of the air monitoring/health and safety professional whose responsibilities will include:

- Monitoring dust levels in the exclusion zone and other locations. The air monitoring professional will have the authority to stop-work in the event that onsite activities generate dust levels that exceed the site or community action levels (see the chart below). The air-monitoring professional will monitor onsite meteorological instrumentation and coordinate with offsite meteorological professionals to identify conditions that require cessation of work (*i.e.*, instantaneous winds in excess of 25 mph or sustained winds over 15 mph). No specific regulatory wind velocity restrictions for soil excavation in the subject area were found to exist. However, a self-imposed action level for work stoppage will be set at a sustained wind velocity of 25 mph, as recommended by DTSC.

- Assure that all real-time aerosol monitors and air sampling equipment and media are properly calibrated and in good working condition. Real-time, data-logging aerosol monitors (personal data ram) will be used, when required, to measure dust levels. Real-time information will be posted daily, and discussed with site workers. As analytical results for samples are received, the environmental professional will prepare summary sheets and discuss results with onsite management and workers.

- Coordinate general site safety activities including all daily hazard communication, safety practices and procedure briefings.

- Oversee personal decontamination practices.

- General site safety leadership, support and record keeping activities.

Although volatile organic contaminant (VOC) concentrations are not expected to be encountered, air monitoring of the workers' breathing zones will be conducted using a direct-reading organic vapor analyzer (OVA) or photo-ionization detector (PID) during excavation and soil handling, consistent with standard health and safety procedures for monitoring worker exposures. If VOCs are detected, monitoring will be conducted.

Airborne dust monitoring will be conducted to verify and document dust suppression efforts. Air monitoring for dust will be performed during the excavation activities proximate to the work exclusion zone utilizing an upwind/downwind sampling approach. The action level for on-site dust monitoring activities is 1.0 milligrams per cubic meter (mg/m^3) total suspended particles (TSP). The National Ambient Air Quality Standard (NAAQS) for total dust is 50 micrograms per cubic meter (ug/m^3), based on dust particles smaller than 10 microns in diameter (PM10). Therefore, the action level for Site perimeter PM-10 monitoring activities is 50 ug/m^3. In the event that on-site activities generate dust concentrations in excess of the established action levels, excavation activities will cease until dust concentrations are below the action levels.

Real-time data-logging aerosol monitors (i.e., Personal DataRam or PDM-3 MiniRam particulate monitor manufactured by MIE, or AirMetrics Mini-Vols as required) will be

used to measure airborne dust levels at the Site. At a minimum, the PDM-3 MiniRam or an equivalent dust meter will be placed upwind to monitor background dust levels and a second dust meter will be used to monitor the excavation equipment operator to provide worst-case dust concentrations at the Site. Dust masks will be provided to Site workers in the event particulate concentrations exceed the action level of 1.0 mg/m^3. Dust meters will be calibrated daily. Dust monitoring results will be posted daily and discussed with Site workers. The dust meters will be set to log dust levels over 5 minute periods and will be visually read every 15 minutes. In consultation with DTSC, the frequency may be changed based on Site conditions and newly available data.

If required, in consultation with DTSC, airborne concentrations of lead may be monitored as necessary to determine worker exposure. Industrial hygiene air sampling may be conducted using OSHA and/or National Institute of Occupational Safety and Health (NIOSH)-approved methods for lead dust scan. NIOSH-approved methods, such as NIOSH 7082 and 7105, have a reliable quantitation limit of 1.5 ug/m^3. This value should be sufficient to allow for quantification and comparison to on-site and community action levels. As analytical results for industrial hygiene samples are received, air monitoring results will be prepared and discussed with on-site management and workers.

Industrial hygiene sample analysis will be completed within 5 working days. However, efforts will be made to receive 24-hour turnaround analytical results from the laboratory.

Air Monitoring Strategy and Methodologies

RBDI will monitor dust levels and airborne concentrations of arsenic and lead in the following general locations:

- Upwind (off-site property if possible)
- Proximate to the exclusion zone
- Up to three Fence Line/Downwind locations
- As deemed necessary to determine employee exposure (to be determined by the RBDI)

Air monitoring samples will be collected over an 8 -10 hour period each day that RAW activities are conducted. The environmental professional will check the equipment every 30 minutes during operation. In consultation with DTSC, this frequency may be changed based on site conditions and newly available data.

Due to the fact that the site COPC are exclusively particulate (lead and arsenic), RBDI will focus on collection and analysis of airborne dust levels and concentrations of arsenic and lead associated with dusts generated by removal activities. As specified in the HASP (see Appendix E), RBDI will base site safety procedures, including dust control measures, on the Action Levels specified in the chart below.

Exposure Guidelines for Site Chemical Hazards

Chemical Name	Odor Threshold	CAL/OSHA PEL [a]	ACGIH TLV [b]	Site Action Levels [c]	Community Action Level (Fence Line) [d]
Total Dust	No Odor	10 mg/m^3	10 mg/m^3	1.0 mg/m^3	0.05 mg/m^3
PM-10 Dust					0.05 mg/m^3
Arsenic	No Odor	0.01 mg/m^3	0.01 mg/m^3	0.001 mg/m^3	
Lead	No Odor	0.01 mg/m^3	0.01 mg/m^3	0.001 mg/m^3	

Notes:

a Permissible Exposure Limits (Cal/OSHA Article 107, Table AC1)

b 1990-1991 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists

c Site Action Level is calculated as 10% of threshold limit value or PEL (as measured by NIOSH methods), whichever is lower. If an action level is met or exceeded, then additional dust mitigation measures will be implemented. If the site air contaminants cannot be controlled reliably within 15 minutes, all work will cease. If site action level for lead and arsenic is exceeded on the integrated air monitors, all work will cease and a Toxicologist/Industrial Hygienist will be consulted.

d Community action levels for total dust/particulate were calculated using algorithms provided courtesy of Dr. T. Booze of DTSC and inputting the maximum concentrations of arsenic and lead detected at the BRHS site.

There is no National Ambient Air quality Standard (NAAQS) for arsenic. The NAAQS for lead is 1.5 µg/m3 calculated as a 30-day average. This value is also the CARB standard. Community action

level for lead and arsenic in dust were calculated using the maximum detected soil concentrations of lead (880 mg/kg) and arsenic (520 mg/kg) and inserting these into the equations provided by Dr. T. Booze of the DTSC and shown below:

Chemical Conc. in Air = (Total Dust Conc. in Air)(Maximum Soil Conc.)(CF)

$$\frac{mg\ Chemical}{m^3} = \left(\frac{mg\ Dust}{m^3}\right)\left(\frac{\max mg\ Chemical}{kg\ soil}\right)\left(\frac{1\ kg\ soil}{1\times 10^{+6}\ mg\ soil}\right)$$

Thus, using the maximum detected arsenic and lead concentrations, the Community Action Levels at the Fence Line would be 0.37 mg/m3 and 1.70 mg/m3 respectively. Since the total dust action level is lower than these calculated dust concentrations, the 0.05 mg/m3 concentration for total dust will be protective.

Dust levels will be measured using real time aerosol monitors during the proposed excavation.

ppm — parts per million

mg/m^3 — milligrams per cubic meter

7.4.2 Meteorological Monitoring

Onsite ambient weather conditions (wind speed and direction, and relative humidity) will be monitored by an onsite met station. Onsite meteorological monitoring will be performed simultaneously with the excavation activities to ensure all necessary precautions have been taken. Detailed information is described in the Site specific HASP (see Appendix E).

7.5 Dust Control Plan

Applicable dust control requirements are found in Rule 2.5 and Rule 2.19 of the Yolo County Air Quality Management District. A dust control plan will be submitted to the Air Pollution Control Officer, if required (this section). Although excavation and removal is scheduled to take place in dry weather, the proper measurements will be taken to ensure that dust creation is kept at a minimal level.

7.5.1 Dust Control

Operations will cease if wind speed exceeds 25 mph. Water will be used to control dust on the site. If needed, the excavation will be filled with clean backfill material in compliance with DTSC's Fact Sheet on Imported Fill Material and re-paved (see Appendix H).

Six inches of freeboard will be maintained within the bed of the haul vehicle. Freeboard is defined as the vertical distance from the highest portion of the edge of the load to the lowest part of the rim of the truck bed.

The soil will contain enough moisture to control dust emissions from the point of origin to the final destination. In the event that the previous measures are insufficient in preventing materials from escaping, tarps or other cargo covers will be employed.

If required, in consultation with DTSC, the RBDI will implement appropriate procedures to control the generation of airborne dusts by soil removal activities. Such procedures will include but will not be limited to the following:

- The site environmental professional will monitor dust levels in the locations outlined in Section 7.5. The professional will have the authority to stop work in the event of that onsite activities generate dust levels in excess of the onsite (1.0 mg/m^3) or community/fence line (50 ug/m^3) action levels. Liberation of dust during the removal operations will be minimized as necessary with the use of water as a dust suppressant. The water will be available via a metered discharge from a fire hydrant located proximate to the site. The site environmental professional will control dust generation by spraying water prior to daily work activities, during excavation/loading activities (as necessary to maintain concentrations below action levels), and at truck staging locations. Watering equipment will be continuously available to provide proper dust control.

- All removal activities will cease in the event wind conditions change creating an uncontrollable condition. If offsite meteorological stations can not provide data relevant to the site, the site environmental professional will rely on the onsite station. This will be determined after mobilization.

- Measurement of airborne dust levels at locations outlined in Section 7.5 using real-time, data-logging aerosol monitors (i.e., Personal DataRam or PDM-3 Miniram particular monitor manufactured by MIE). At a minimum, PDM-3 Miniram or equivalent will be placed upwind to monitor background conditions and the second set will be placed on the backhoe operator to provide worst case dust concentrations on the site. Dust masks will be provided to onsite workers in the event that particulate concentrations exceed 1 mg/m^3 (see Appendix E – Health and Safety Plan). These instruments will be calibrated daily and monitoring information posted daily, and discussed with site workers. The monitors will be set to log dust levels over 5 minute periods and will be visually read every 30 minutes. In consultation with DTSC, the frequency may be changed based on site conditions or newly available data.

7.5.2 Metals Monitoring

According to Title 22 (66699) of the California Administrative Code, Division 4 Environmental Health, Chapter 30: Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes: (extract)

(c) Any waste is a hazardous waste which contains a substance listed subsections (b) or (c) of this Section:

(2) At a concentration in milligrams per liter as determined pursuant to Section 66700 which exceeds it's listed Soluble Threshold Limit Concentration (STLC), or its listed Total Threshold Limit Concentration (TTLC).

(d) Lead is listed with corresponding TTLC and STLC values as given below:

	TTLC (mg/kg)	***STLC (mg/L)***
Lead	*1,000*	*5.0*
Arsenic	*500*	*5.0*
Antimony	*500*	*15*

All soils to be disposed offsite will first be tested for lead by the TTLC and STLC for leachability and hazardous waste classification in accordance with DTSC's Hazardous Waste Classification rules provided in Title 22.

RBDI will document airborne concentrations of lead and arsenic in the locations outlined Section 7.5 and as necessary to determine employee exposure. RBDI will use OSHA/NIOSH approved methods to collect and analyze the samples

As analytical results for air samples (using OSHA/NIOSH approved methods for lead and arsenic dust scan) are received, the environmental professional will prepare summary sheets and discuss results with on-site management and workers. RBDI will arrange for lead and arsenic sample analysis to be completed within 5 days. However, efforts will be made to receive 24-hour turnaround from the laboratory.

7.5.3 Other Environmental Monitoring

No other environmental monitoring is anticipated.

7.6 Confirmation Sampling

Following excavation of the site, soils excavated will be analyzed for lead and arsenic by both the TTLC and STLC criteria, using SW846-6010B, with and without de-ionized water.

After initial excavation of lead and arsenic impacted soils, testing will be conducted to verify that all lead and arsenic impacted soils have been removed.

The post-excavation verification sampling program for the proposed removal action will consist of taking multiple readings from within the excavation pit and within the arsenic “hot spot” using a hand-held XRF (x-ray fluorescence) spectrometer. Each day the XRF is in use, it will be calibrated to assure its detection limit is not greater than 100 mg/kg. Locations of XRF samples will be measured, recorded and mapped to determine the extent of excavation. All samples will be analyzed for lead and arsenic. Twenty-five samples will be analyzed by the XRF and then sent to the laboratory for verification.

Additional XRF readings will also be taken if any visually impacted soil is encountered at excavation depth. XRF readings will be compared to the cleanup goals. Analytical results from readings exceeding the preliminary cleanup goals will result in further excavation and an additional set of XRF measurements. The excavation of each additional 5-foot grid or 1-foot depth lift will proceed until the cleanup goals are met (from any outward-facing sidewall sample and/or final bottom sample).

After the site has been excavated to the appropriate depth(s), and XRF readings confirm that lead and arsenic concentrations are below the cleanup levels, a minimum of eight (8) discrete confirmation soil samples will be collected from the bottom of the excavation pits, as depicted in Figure 10. These samples serve as a second quality control check on excavation and XRF readings. Soil samples will be transported to a State-certified analytical laboratory and analyzed for lead using EPA Method 6010B.

Confirmation samples will be collected directly into sampling jars thereby reducing the number of sampling equipment which will significantly reduce the possibility of cross contamination. The samples will be stored onsite in a cooler filled with blue ice prior to delivery to a California-certified laboratory. All confirmation soil samples will be analyzed for lead, antimony and arsenic, using USEPA SW-846 Methods 6010B or equivalent, and for leachable lead, antimony and arsenic, using the California Code of Regulations, Title 22, Waste Extraction Test (WET). The sampling will be conducted in general accordance with applicable field procedures, and Quality Assurance/Quality Control (QA/QC) protocols.

Samples will be delivered to the lab on the same day collected, if time permits, and no later than the day following collection. In the event the samples are delivered the day after they are collected, the samples will be secured under proper chain of custody documentation until delivery.

The excavation will be considered complete if the analytical results for lead are less than the lead cleanup level of 150 mg/Kg, results for antimony are less than the antimony cleanup level of 30 mg/Kg, and results for arsenic are within the 3.6 to 9.6 mg/Kg range. If lead or arsenic concentrations in confirmation soil samples exceed the cleanup goal, than an additional 5-foot radius and/or 1-foot depth of soil may be excavated from the corresponding sampling area. The expanded area will be re-sampled in accordance with the procedure described above. Vertically, this procedure will be repeated until the soil cleanup goal is achieved.

Shoring will not be needed as the excavation will be sloped on all sides on a 1½H :1V basis or confirmation soil sampling will be performed using the excavator. Horizontally, the excavation will be considered complete if the cleanup goal is achieved.

7.7 Transportation Plan for Offsite Disposal

The transportation plan has been written in accordance with *"Transportation Plan: Preparation Guidance for Site Remediation, Interim Final"* (DTSC, 1994b). The transportation plan is in Appendix G.

The possible destinations for designated waste (as defined by Section 13173 of the Water Code) are:

Norcal Waste Systems Ostrom Road Landfill
5900 Ostrom Road
Wheatland, CA 95692
(800) 208-2370, extension 229

or

Norcal Waste Systems Hay Road Landfill
6426 Hay Road
Vacaville, CA 95687
(800) 208-2370, extension 229

or

ECDC Environmental Landfill
1111 WEST HIGHWAY 123
EAST CARBON, UT 84520

Hazardous waste (as defined by Section 40141 of the Water Code) will be taken to

Chemical Waste Management
Kettleman Hills Facility
35251 Old Skyline Road
Kettleman City, California

Information for the waste disposal facilities is in Appendix I.

7.8 Backfill and Site Restoration

The excavation of the site may remain open a maximum of 60 days if construction is expected to take place onsite; otherwise the excavation will be filled with clean backfill material in compliance with DTSC's *Fact Sheet on Imported Fill Material* (see Appendix H) and re-paved. While the excavation is open, security fencing with a locking gate will be installed (see Section 7.1.3). Storm water runoff will be controlled as per 40 CFR 100-149 (see Appendix C).

All operations involving excavation and trenching will be sloped, benched, shored or braced in accordance with 29 CFR 1926.650 and California OSHA Regulations for excavations (Title 8, 1539 -1547) (See Appendix E, Health & Safety Plan, Section 13.0).

7.8.1 Borrow Source Evaluation

If imported clean fill is used, the borrow material will be approximately 2,000 cubic yards. Therefore, according to DTSC guidance (Appendix H), six soil samples will be required to evaluate the borrow material. Borrow will likely come from land near a "mining area or rock quarry", therefore evaluation of Heavy Metals (EPA methods 6010B and 7471A) will be required

7.8.2 Load Checking

Load checking will follow the procedure designated in the Transportation Plan for removal of contaminated soil. The soil will be transported by 25-ton dump truck. A dust control plan will be implemented. Six inches of freeboard will be maintained within the bed of the vehicle.

The soil will contain enough moisture to control dust emissions from the point of origin to the final destination. In the event that the previous measures are insufficient in preventing materials from escaping, tarps or other cargo covers will be used.

All loads of imported fill will be checked by Organic Vapor Analyzer for each truckload entering the site and by visual screening for fuel/hydraulic oil leaks (or other staining) in soil placed for filling the site excavation.

7.8.3 Diversion of Unacceptable Borrow

Imported fill soils material will be visually checked for unacceptable materials at the working face. If loads containing unacceptable materials (exhibit staining or detectable VOCs) are dumped, transporters of the unacceptable loads will be stopped before leaving the site.

Equipment operators will watch for evidence of contaminated imported fill in loads being dumped at the working face. If contaminated soils are found or suspected, the imported fill soils are to be isolated. The hauler of the prohibited materials will be identified and the Project Manager will be contacted to determine what appropriate actions will be taken.

Segregated, improper materials will be removed from the working face immediately. These materials will be reloaded to the transporter's vehicle when possible or stockpiled in an appropriate area for later removal by a properly licensed waste hauler.

7.8.4 Documentation of Rejected Loads

All loads that enter the site and are subsequently rejected will be recorded. Data compiled will include when the incident occurred, who the hauler was, why the load was rejected, whether the load was dumped prior to rejection, and what steps were taken to remove the rejected material. Additional data may be recorded as deemed necessary for the particular situation.

A separate area will always be maintained for the storage of unacceptable materials, pending removal by the original transporter or a properly licensed waste hauler. A temporary pad will be constructed for temporary storage of unacceptable soils segregated from dumped loads. The pad will be used to store these segregated

materials solely for the length of time required to enlist the services of a licensed waste hauler for their removal.

7.8.5 Site Restoration

Depending on the needs of the client, the site may not need to be restored. If restoration is required, the excavation pit will be backfilled, and the site will be restored to grade.

7.9 Variance

As conditions in the field may vary, it may become necessary to implement minor modifications to soil removal activities as presented in this RAW. Field personnel will notify the project manager when deviations from this RAW are necessary. DTSC will be notified of the modification immediately, and a verbal or written approval will be obtained from DTSC before implementing the modifications, as appropriate. Modifications to the approved RAW will be documented in the field logbook and in the Report of Completion for this RAW.

8.0 PROJECT SCHEDULE AND REPORT OF COMPLETION

Submit RAW to DTSC	September 14, 2007
Workplan approval (anticipated)	To be determined by the DTSC
30-Day Public Comment Period	Thirty days after DTSC's approval of the RAW
Utility Clearance (USA)	Forty-eight hours prior to remediation
Permit Approval	Two weeks prior to remediation activities
Site Excavation and Disposal[1]	Four week period
Report of Completion	Sixty days after completion of all field activities

[1] Excavation schedule is contingent on the property owner first razing the property to make the contaminated soil accessible.

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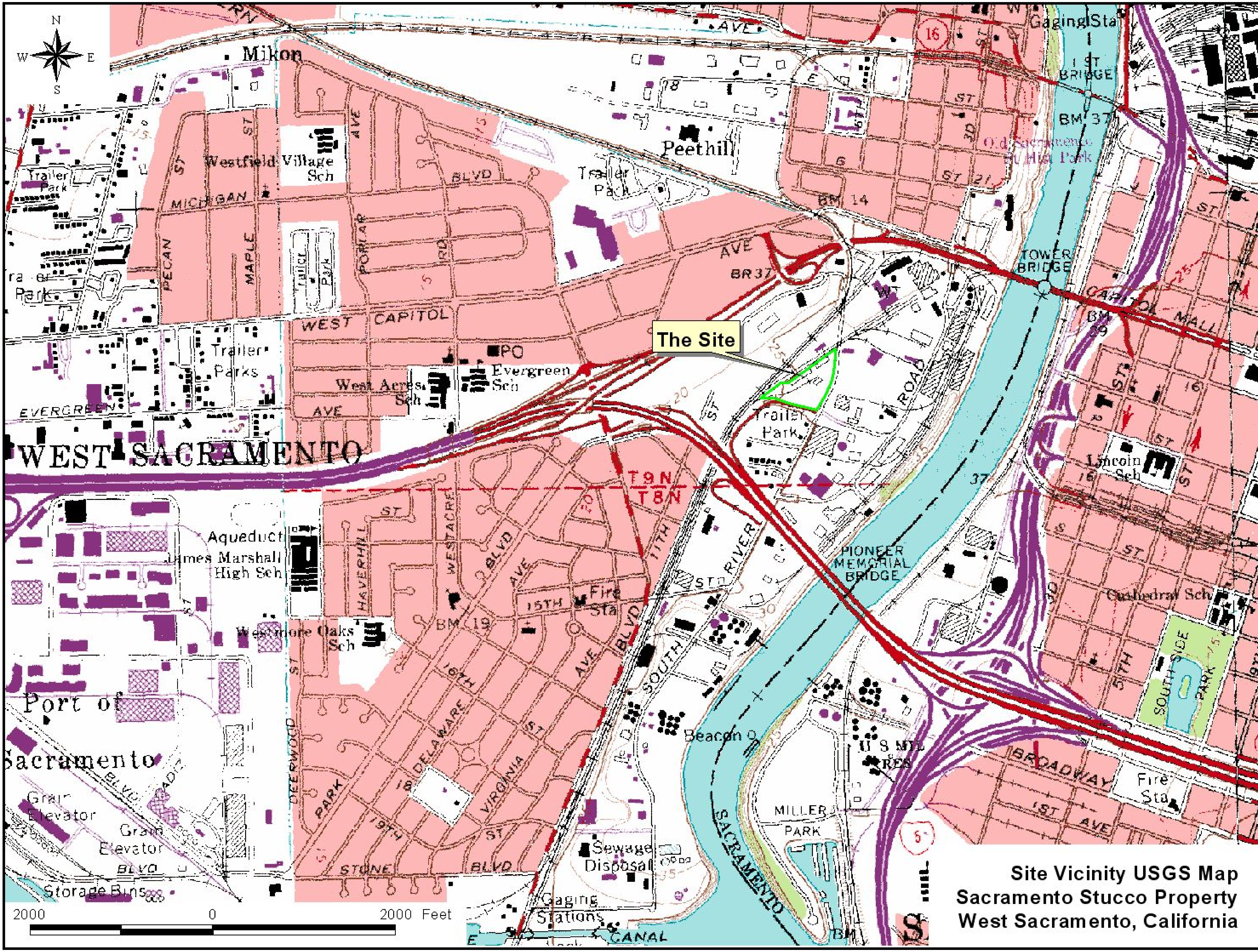
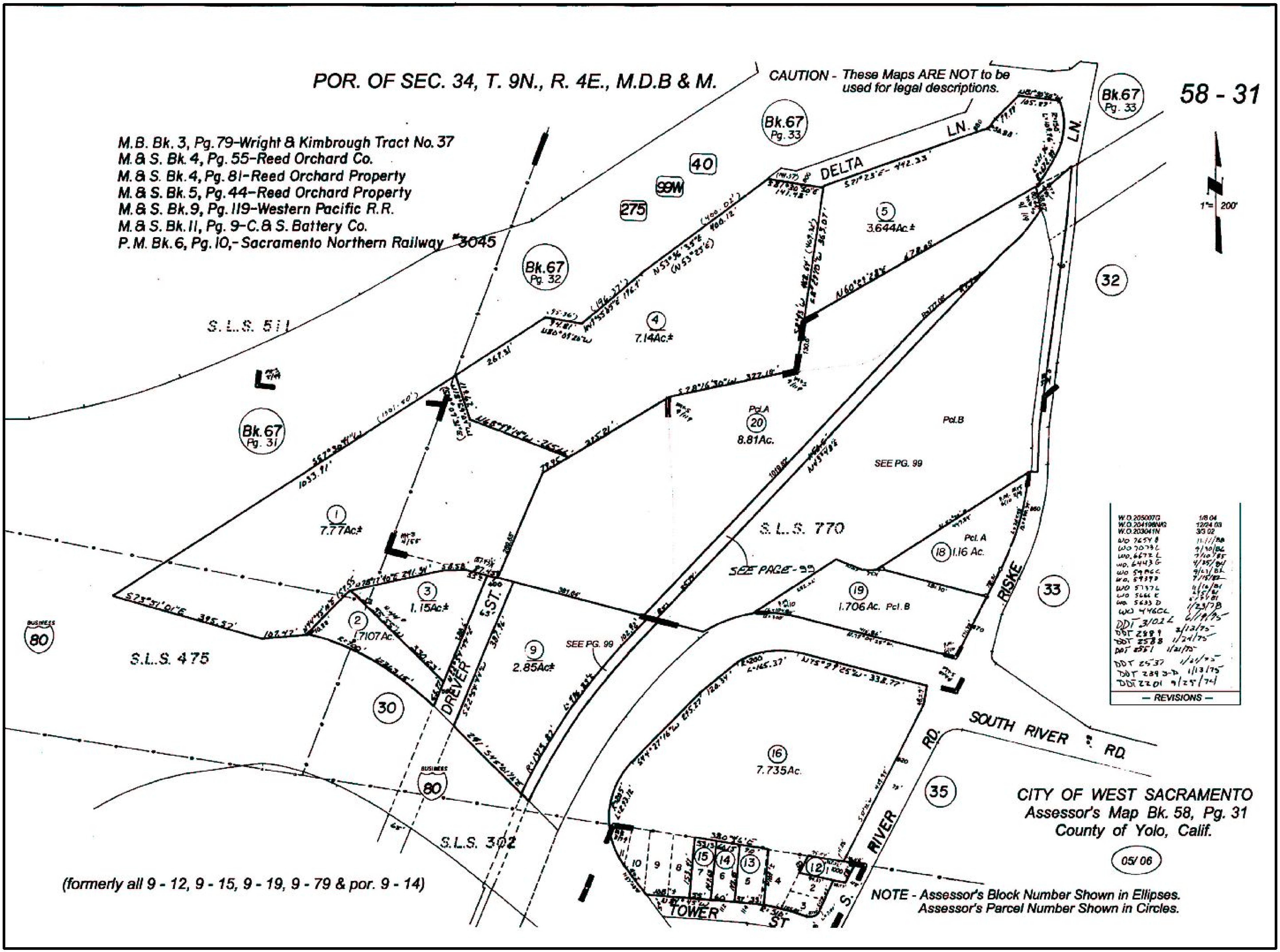


Site Vicinity USGS Map
Sacramento Stucco Property
West Sacramento, California


N
S
E
W
Office
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
SB1
SB2
SB3
SB4
SB5
SB6
SB7
SB8
SB9
RISKE LANE
SOUTH RIVER ROAD
Legend
Soil Samples, 1-12-2006
Soil Samples, 6-29-2005
Site Boundary
100
0
100 Feet
Plot Plan
Sacramento Stucco Property
West Sacramento, California



POR. OF SEC. 34, T. 9N., R. 4E., M.D.B & M.
CAUTION - These Maps ARE NOT to be used for legal descriptions.
58 - 31
M.B. Bk. 3, Pg. 79-Wright & Kimbrough Tract No. 37
M.& S. Bk. 4, Pg. 55-Reed Orchard Co.
M.& S. Bk. 4, Pg. 81-Reed Orchard Property
M.& S. Bk. 5, Pg. 44-Reed Orchard Property
M.& S. Bk. 9, Pg. 119-Western Pacific R.R.
M.& S. Bk. 11, Pg. 9-C.& S. Battery Co.
P.M. Bk. 6, Pg. 10,-Sacramento Northern Railway
1"= 200'
DELTA LN.
RISKE LN.
SOUTH RIVER RD.
S. RIVER RD.
DREVER ST.
TOWER ST
S.L.S. 511
S.L.S. 770
S.L.S. 475
S.L.S. 302
SEE PG. 99
SEE PAGE - 99
Pcl. A
Pcl. B
7.77Ac±
1.15Ac±
.7107Ac.
2.85Ac±
7.14Ac.±
3.644Ac.±
8.81Ac.
1.16 Ac.
1.706 Ac.
7.735Ac.
— REVISIONS —
CITY OF WEST SACRAMENTO
Assessor's Map Bk. 58, Pg. 31
County of Yolo, Calif.
05/06
NOTE - Assessor's Block Number Shown in Ellipses.
Assessor's Parcel Number Shown in Circles.
(formerly all 9 - 12, 9 - 15, 9 - 19, 9 - 79 & por. 9 - 14)

Figure 3

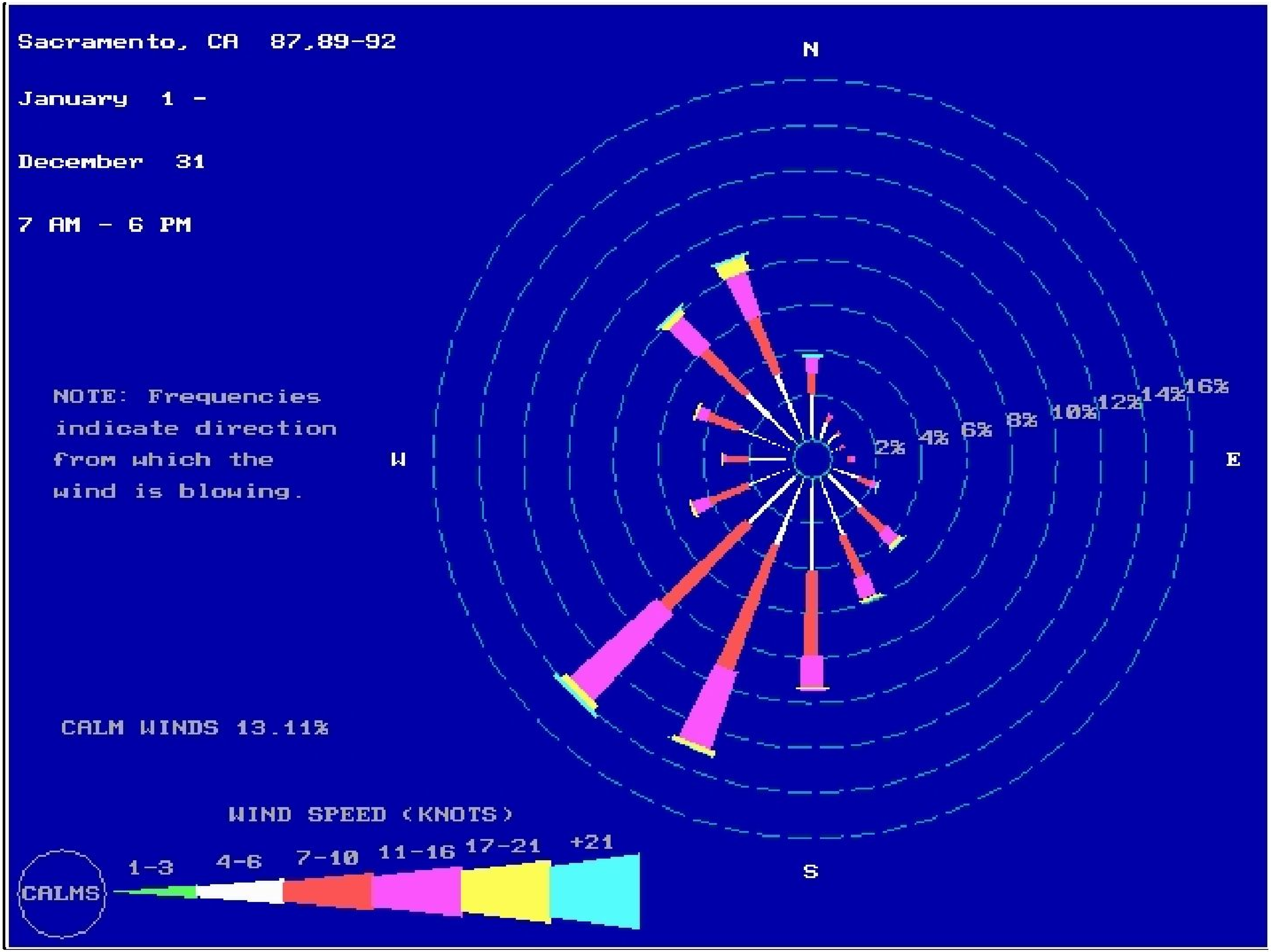

Sacramento, CA 87,89-92
January 1 -
December 31
7 AM - 6 PM
N
W
E
S
2%
4%
6%
8%
10%
12%
14%
16%
NOTE: Frequencies indicate direction from which the wind is blowing.
CALM WINDS 13.11%
WIND SPEED (KNOTS)
CALMS
1-3
4-6
7-10
11-16
17-21
+21

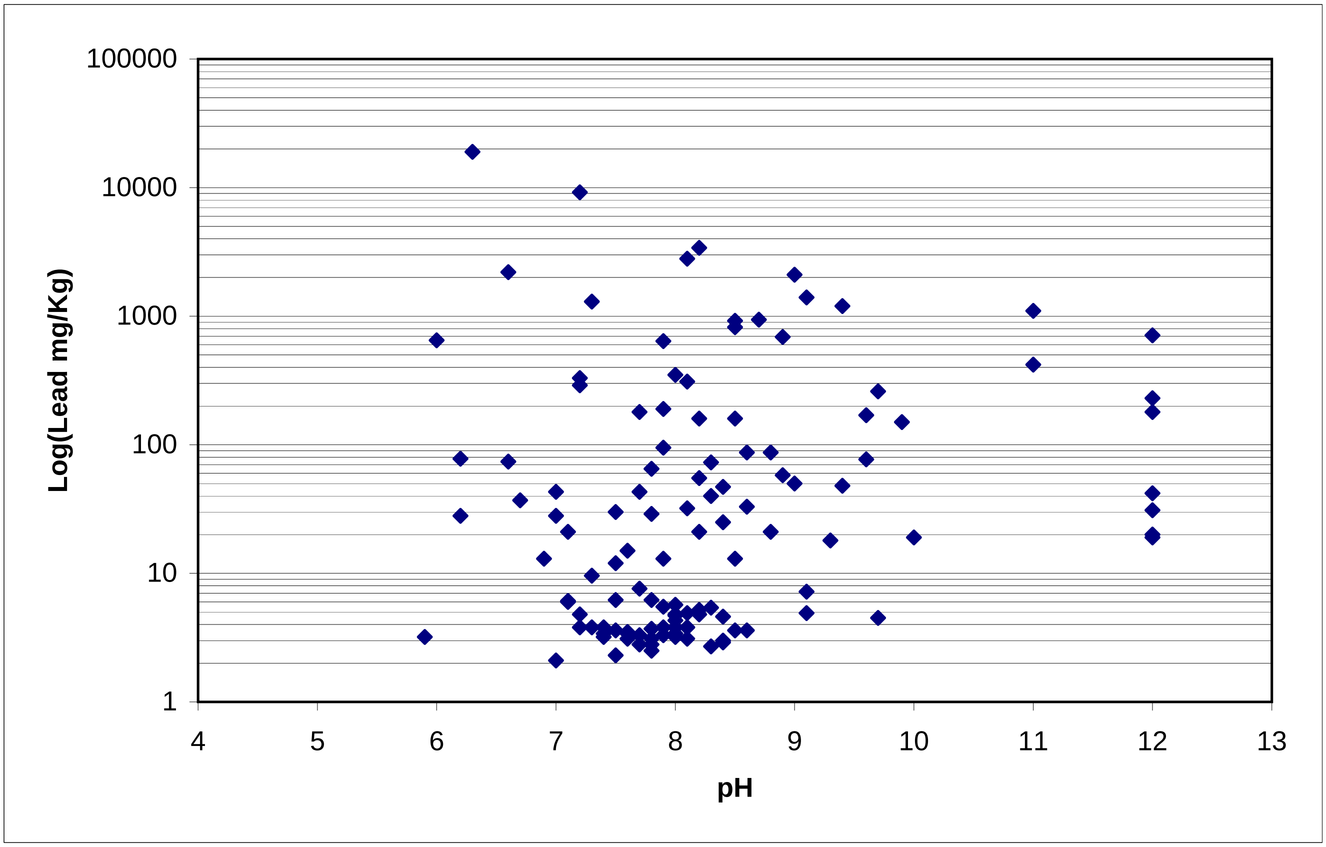
Figure 4

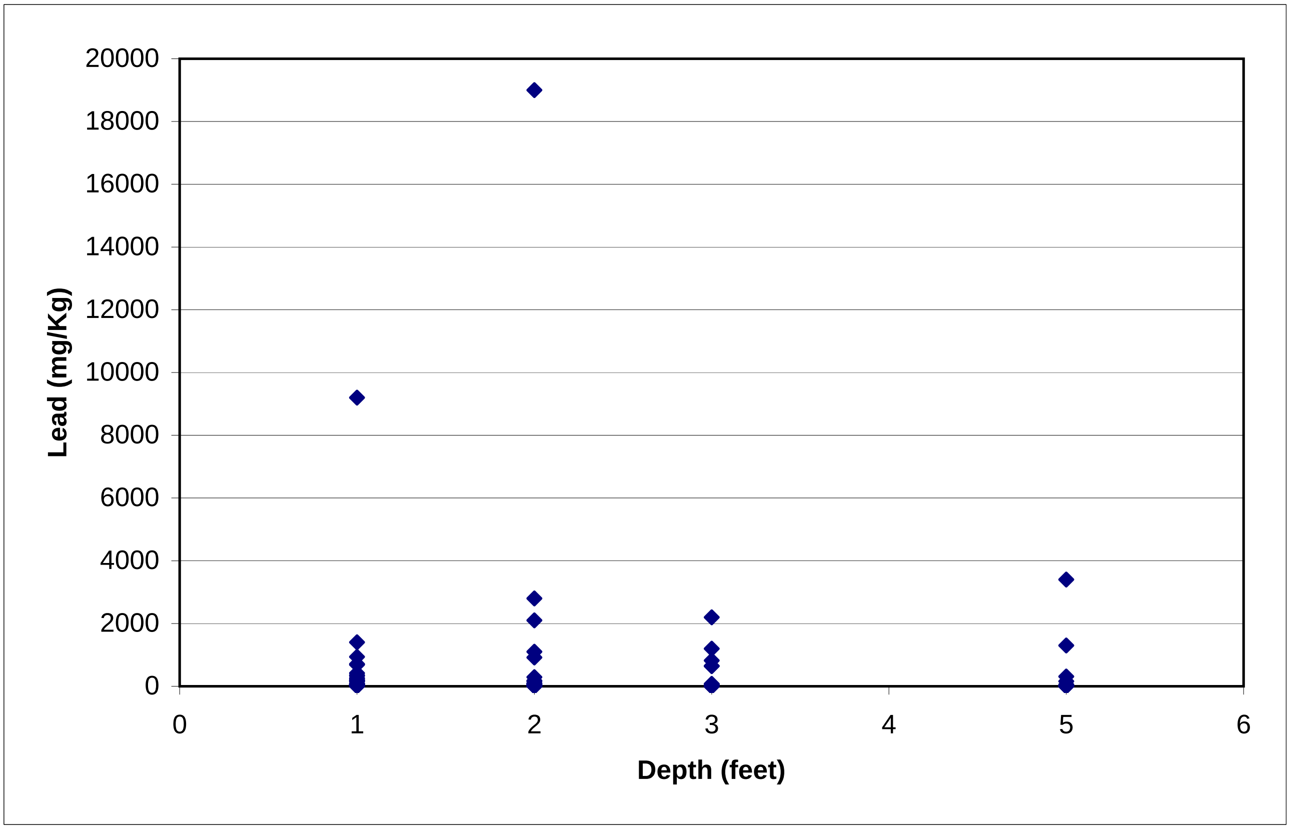

N
W
E
S
B4 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 110
6"-12" 470
12"-18" 47
18"-24" 780
24"-30" 5
30"-36" 7.9
B5 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 2,300
30"-36" 3,000
SB8 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 230
SB7 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 1,250
SB9 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 979
SB1 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 179
B7 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 450
30"-36" 3,800
B3 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 9.6
30"-36" 7.1
SB4 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 287
SB6 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 1,520
SB2 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 193
B2 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 17
30"-36" 2.9
SB5 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 340
SB3 (6/29/2005)
Depth (in, bgs) Lead (mg/kg)
0"-6" 174
B6 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 640
30"-36" 89
B1 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 100
30"-36" 6.5
B5
SB9
B4
SB8
SB7
SB1
SB4
B7
SB6
SB3
SB2
SB5
B6
B3
B2
B10
B1
B12
B8
B11
B9
RISKE LANE
SOUTH RIVER ROAD
B12 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 44
30"-36" 19
B10 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 72
30"-36" 18
B8 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 240
30"-36" 100
B11 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 25
30"-36" 12
B9 (1/12/2006)
Depth (in, bgs) Lead (mg/kg)
0"-6" 16
30"-36" 4.3
Legend
Soil Samples, 1-12-2006
Soil Samples, 6-29-2005
Site Boundary
100 0 100 Feet
Soil Analytical Results - Lead (mg/kg)
(6/29/05 and 1/12/06)
Sacramento Stucco Property
West Sacramento, California


N
S
W
E
TS-7 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 940
2 ft 1,100
3 ft 650
5 ft 3.2
TS-5 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 330
2 ft 2,800
3 ft 13
5 ft 3.4
TS-2 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 230
2 ft 37
3 ft 78
5 ft 21
TS-1 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 9,200
2 ft 28
3 ft 3.8
5 ft 3.4
TS-6 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 350
2 ft 29
3 ft 6.2
5 ft 5.2
TS-3 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 690
2 ft 19,000
3 ft 4.8
5 ft 6.0
TS-9 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 180
2 ft 2,100
3 ft 2,200
5 ft 3.5
TS-4 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 190
2 ft 180
3 ft 820
5 ft 310
TS-13 (9/8/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 58
2 ft 4.5
3 ft 5.4
5 ft 4.7
TS-8 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 170
2 ft 5.7
3 ft 3.8
5 ft 3.4
TS-16 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 19
2 ft 7.6
3 ft 9.6
5 ft 1,300
TS-11 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 710
2 ft 3.6
3 ft 3.8
5 ft 2.8
TS-17 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 20
2 ft 50
3 ft 65
5 ft 55
TS-18 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 40
2 ft 32
3 ft 640
5 ft 3,400
TS-10 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 420
2 ft 160
3 ft 3.8
5 ft 3.8
TS-19 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 260
2 ft 95
3 ft 1,200
5 ft 160
TS-15 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 3.6
2 ft 3.0
3 ft 3.3
5 ft 5.5
TS-20 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 1,400
2 ft 920
3 ft 18
5 ft 12
TS-12 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 87
2 ft 290
3 ft 2.1
5 ft 3.2
TS-14 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 4.9
2 ft 2.9
3 ft 6.2
5 ft 2.3
TS-1
TS-2
TS-3
TS-4
TS-5
TS-6
TS-7
TS-8
TS-9
TS-10
TS-11
TS-12
TS-13
TS-14
TS-15
TS-16
TS-17
TS-18
TS-19
TS-20
RISKE LANE
SOUT
OAD
Legend
Target Sample Locations
10'x10' grid.shp
Site Boundary
100
0
100 Feet
Analytical Results of Target Soil Sampling
- Lead (mg/kg)
Sacramento Stucco Property
West Sacramento, California

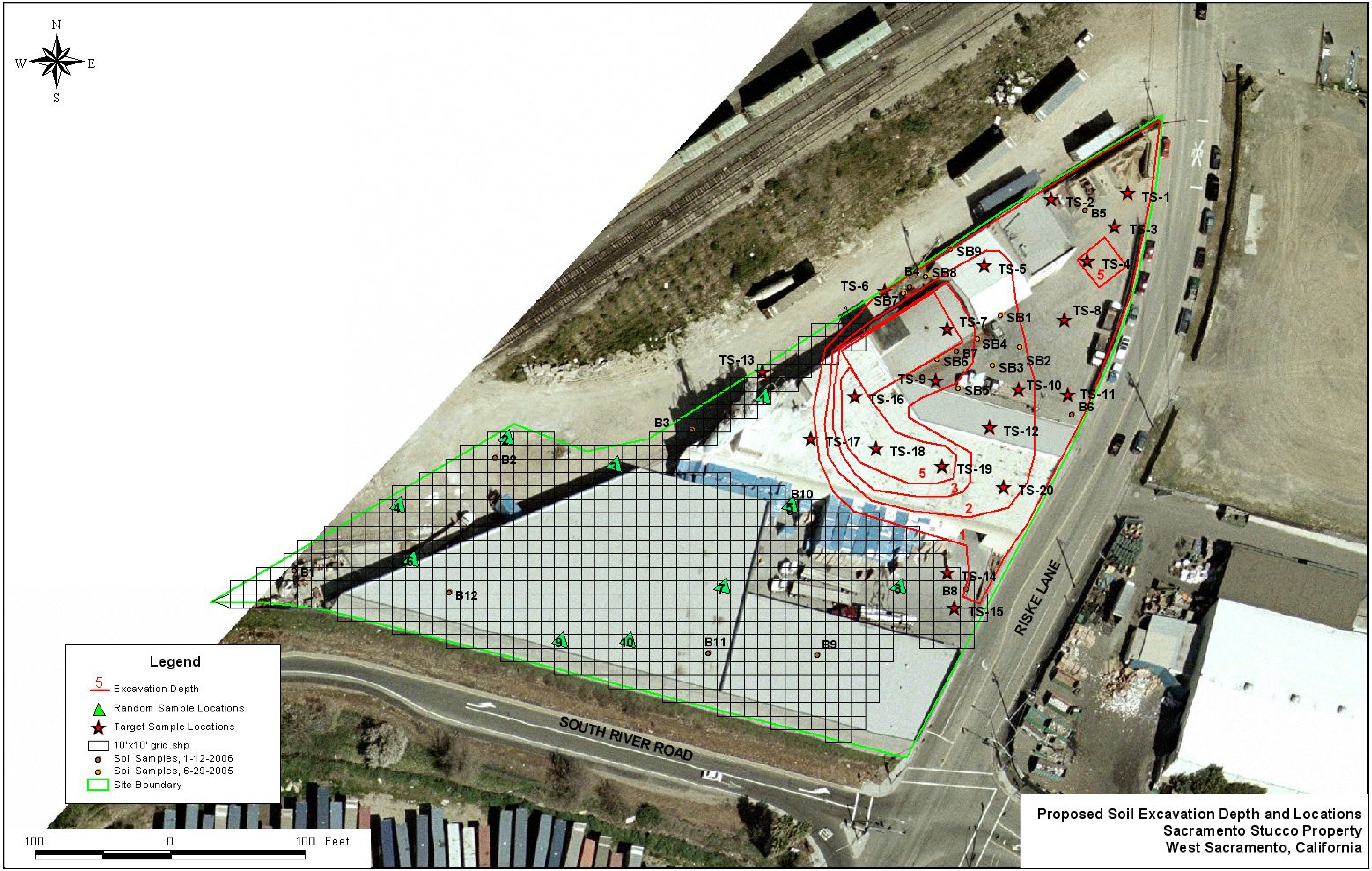

N
S
W
E
RS-2 (9/8/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 42
2 ft 19
3 ft 3.6
5 ft 4.6
RS-3 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 7.2
2 ft 3.2
3 ft 4.8
5 ft 3.3
RS-1 (9/8/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 31
2 ft 87
3 ft 13
5 ft 3.7
RS-4 (9/8/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 77
2 ft 21
3 ft 4.8
5 ft 4.3
RS-5 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 48
2 ft 33
3 ft 47
5 ft 25
RS-6 (9/8/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 150
2 ft 28
3 ft 6.1
5 ft 3.8
RS-8 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 73
2 ft 2.7
3 ft 3.1
5 ft 3.1
RS-9 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 43
2 ft 30
3 ft 2.5
5 ft 2.8
RS-10 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 43
2 ft 74
3 ft 15
5 ft 3.1
RS-7 (9/7/2006)
Depth (in, bgs) Lead (mg/kg)
1 ft 13
2 ft 4.9
3 ft 3.8
5 ft 21
1
2
3
4
5
6
7
8
9
10
RISKE LANE
SOUTH RIVER ROAD
Legend
Random Sample Locations
10'x10' grid.shp
Site Boundary
100 0 100 Feet
Analytical Results of Random Soil Sampling
- Lead (mg/kg)
Sacramento Stucco Property
West Sacramento, California

pH vs Lead Concentration
Sacramento Stucco Company
860 Riske Lane





20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Lead (mg/Kg)
0
1
2
3
4
5
6
Depth (feet)



Proposed Soil Excavation Depth and Locations
Sacramento Stucco Property
West Sacramento, California

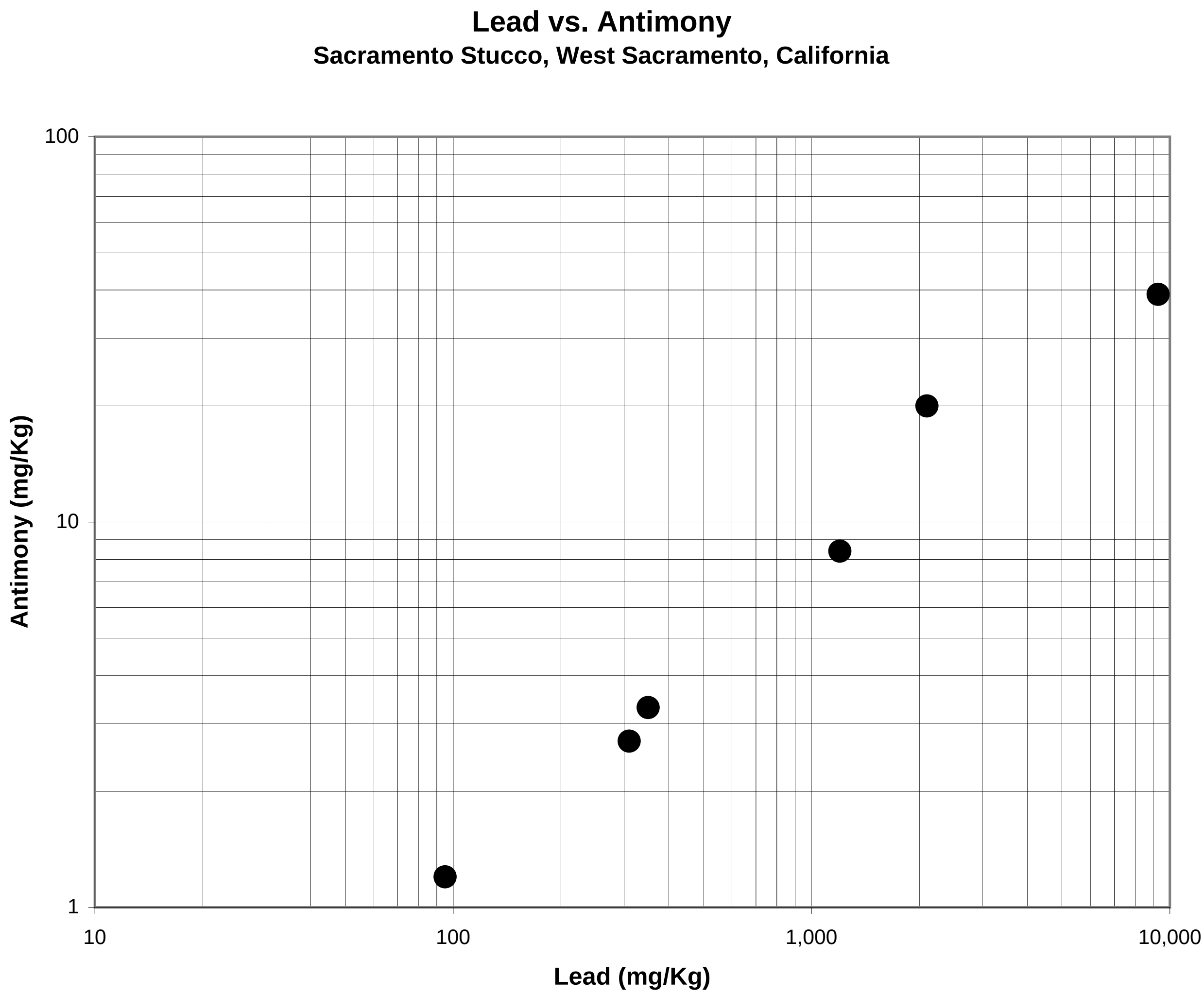

Lead vs. Antimony
Sacramento Stucco, West Sacramento, California
Antimony (mg/Kg)
100
10
1
10
100
1,000
10,000
Lead (mg/Kg)

Table 1 Forward Landfill Waste Disposal Receipts
Sacramento Stucco
West Sacramento, Yolo County, California

	Receipt No.	*Received Date*	*Invoice Date*	*Volume (CY)*
	9627	5/24/1980		25
	9628	5/24/1980		25
	9629	5/24/1980		25
	9630	5/25/1980		25
	9631	5/25/1980		25
	9632	5/25/1980		25
SUB-TOTAL	**4119**	**5/31/1980**	**6/10/1980**	**150**
	4113	**11/7/1980**		**8**
	4129	**11/7/1980**		**8**
	10597	12/9/1980		25
	10600	12/10/1980		25
	10705	12/10/1980		25
	10711	12/11/1980		25
	10717	12/11/1980		25
	10687	12/12/1980		25
	10724	12/12/1980		25
	10744	12/15/1980		25
	10750	12/15/1980		25
	20254	12/16/1980		25
	20261	12/16/1980		25
	20473	12/17/1980		12
SUB-TOTAL	**3069**	**12/31/1980**	**1/6/1981**	**287**
	12997	02/09/81		12
	11971	2/10/1981		25
	12923	2/10/1981		12.5
	11986	2/11/1981		25
	12926	2/11/1981		25
	11891	2/18/1981		25
SUB-TOTAL	**3477**	**2/28/1981**	**3/4/1981**	**124.5**
TOTAL				**577.5**

TABLE 2
LEAD AND pH DATA
9/7/2006-9/8/2006
Sacramento Stucco
860 Riske Lane
West Sacramento, California

Sample ID	*Date*	*Lead*	*pH*
TS-1 1 Ft.	9/7/2006	9,200	7.2
TS-1 2 Ft.	9/7/2006	28	6.2
TS-1 3 Ft.	9/7/2006	3.8	7.2
TS-1 5 Ft.	9/7/2006	3.4	7.4
TS-2 1 Ft.	9/7/2006	230	12.0
TS-2 2 Ft.	9/7/2006	37	6.7
TS-2 3 Ft.	9/7/2006	78	6.2
TS-2 5 Ft.	9/7/2006	21	7.1
TS-3 1 Ft.	9/7/2006	690	8.9
TS-3 2 Ft.	9/7/2006	19,000	6.3
TS-3 3 Ft.	9/7/2006	4.8	7.2
TS-3 5 Ft.	9/7/2006	6.0	7.1
TS-4 1 Ft.	9/7/2006	190	7.9
TS-4 2 Ft.	9/7/2006	180	7.7
TS-4 3 Ft.	9/7/2006	820	8.5
TS-4 5 Ft.	9/7/2006	310	8.1
TS-5 1 Ft.	9/7/2006	330	7.2
TS-5 2 Ft.	9/7/2006	2,800	8.1
TS-5 3 Ft.	9/7/2006	13	6.9
TS-5 5 Ft.	9/7/2006	3.4	7.6
TS-6 1 Ft.	9/8/2006	350	8.0
TS-6 2 Ft.	9/8/2006	29	7.8
TS-6 3 Ft.	9/8/2006	6.2	7.8
TS-6 5 Ft.	9/8/2006	5.2	8.2
TS-7 1 Ft.	9/7/2006	940	8.7
TS-7 2 Ft.	9/7/2006	1,100	11.0
TS-7 3 Ft.	9/7/2006	650	6.0
TS-7 5 Ft.	9/7/2006	3.2	7.4
TS-8 1 Ft.	9/7/2006	170	9.6
TS-8 2 Ft.	9/7/2006	5.7	8.0
TS-8 3 Ft.	9/7/2006	3.8	8.1
TS-8 5 Ft.	9/7/2006	3.4	8.0
TS-9 1 Ft.	9/7/2006	180	12.0
TS-9 2 Ft.	9/7/2006	2,100	9.0
TS-9 3 Ft.	9/7/2006	2,200	6.6
TS-9 5 Ft.	9/7/2006	3.5	7.6
TS-10 1 Ft.	9/7/2006	420	11.0
TS-10 2 Ft.	9/7/2006	160	8.5
TS-10 3 Ft.	9/7/2006	3.8	8.1
TS-10 5 Ft.	9/7/2006	3.8	7.4
TS-11 1 Ft.	9/7/2006	710	12.0
TS-11 2 Ft.	9/7/2006	3.6	7.5
TS-11 3 Ft.	9/7/2006	3.8	8.0
TS-11 5 Ft.	9/7/2006	2.8	7.8
TS-12 1 Ft.	9/7/2006	87	8.6
TS-12 2 Ft.	9/7/2006	290	7.2

TABLE 2
LEAD AND pH DATA
9/7/2006-9/8/2006
Sacramento Stucco
860 Riske Lane
West Sacramento, California

Sample ID	*Date*	*Lead*	*pH*
TS-12 3 Ft.	9/7/2006	2.1	7.0
TS-12 5 Ft.	9/7/2006	3.2	5.9
TS-13 1 Ft.	9/8/2006	58	8.9
TS-13 2 Ft.	9/8/2006	4.5	9.7
TS-13 3 Ft.	9/8/2006	5.4	8.3
TS-13 5 Ft.	9/8/2006	4.7	8.0
TS-14 1 Ft.	9/7/2006	4.9	9.1
TS-14 2 Ft.	9/7/2006	2.9	8.4
TS-14 3 Ft.	9/7/2006	6.2	7.5
TS-14 5 Ft.	9/7/2006	2.3	7.5
TS-15 1 Ft.	9/7/2006	3.6	8.6
TS-15 2 Ft.	9/7/2006	3.0	8.4
TS-15 3 Ft.	9/7/2006	3.3	7.9
TS-15 5 Ft.	9/7/2006	5.5	7.9
TS-16 1 Ft.	9/7/2006	19	12.0
TS-16 2 Ft.	9/7/2006	7.6	7.7
TS-16 3 Ft.	9/7/2006	9.6	7.3
TS-16 5 Ft.	9/7/2006	1,300	7.3
TS-17 1 Ft.	9/7/2006	20	12.0
TS-17 2 Ft.	9/7/2006	50	9.0
TS-17 3 Ft.	9/7/2006	65	7.8
TS-17 5 Ft.	9/7/2006	55	8.2
TS-18 1 Ft.	9/7/2006	40	8.3
TS-18 2 Ft.	9/7/2006	32	8.1
TS-18 3 Ft.	9/7/2006	640	7.9
TS-18 5 Ft.	9/7/2006	3,400	8.2
TS-19 1 Ft.	9/7/2006	260	9.7
TS-19 2 Ft.	9/7/2006	95	7.9
TS-19 3 Ft.	9/7/2006	1,200	9.4
TS-19 5 Ft.	9/7/2006	160	8.2
TS-20 1 Ft.	9/7/2006	1,400	9.1
TS-20 2 Ft.	9/7/2006	920	8.5
TS-20 3 Ft.	9/7/2006	18	9.3
TS-20 5 Ft.	9/7/2006	12	7.5
RS-1 1 Ft.	9/8/2006	31	12.0
RS-1 2 Ft.	9/8/2006	87	8.8
RS-1 3 Ft.	9/8/2006	13	8.5
RS-1 5 Ft.	9/8/2006	3.7	7.8
RS-2 1 Ft.	9/8/2006	42	12.0
RS-2 2 Ft.	9/8/2006	19	10.0
RS-2 3 Ft.	9/8/2006	3.6	8.5
RS-2 5 Ft.	9/8/2006	4.6	8.4
RS-3 1 Ft.	9/7/2006	7.2	9.1
RS-3 2 Ft.	9/7/2006	3.2	8.0
RS-3 3 Ft.	9/7/2006	4.8	8.2
RS-3 5 Ft.	9/7/2006	3.3	7.7

TABLE 2
LEAD AND pH DATA
9/7/2006-9/8/2006
Sacramento Stucco
860 Riske Lane
West Sacramento, California

Sample ID	*Date*	*Lead*	*pH*
RS-4 1 Ft.	9/8/2006	77	9.6
RS-4 2 Ft.	9/8/2006	21	8.8
RS-4 3 Ft.	9/8/2006	4.8	8.0
RS-4 5 Ft.	9/8/2006	4.3	8.0
RS-5 1 Ft.	9/7/2006	48	9.4
RS-5 2 Ft.	9/7/2006	33	8.6
RS-5 3 Ft.	9/7/2006	47	8.4
RS-5 5 Ft.	9/7/2006	25	8.4
RS-6 1 Ft.	9/8/2006	150	9.9
RS-6 2 Ft.	9/8/2006	28	7.0
RS-6 3 Ft.	9/8/2006	6.1	7.1
RS-6 5 Ft.	9/8/2006	3.8	7.3
RS-7 1 Ft.	9/7/2006	13	7.9
RS-7 2 Ft.	9/7/2006	4.9	8.1
RS-7 3 Ft.	9/7/2006	3.8	7.9
RS-7 5 Ft.	9/7/2006	21	8.2
RS-8 1 Ft.	9/7/2006	73	8.3
RS-8 2 Ft.	9/7/2006	2.7	8.3
RS-8 3 Ft.	9/7/2006	3.1	8.1
RS-8 5 Ft.	9/7/2006	3.1	7.8
RS-9 1 Ft.	9/7/2006	43	7.0
RS-9 2 Ft.	9/7/2006	30	7.5
RS-9 3 Ft.	9/7/2006	2.5	7.8
RS-9 5 Ft.	9/7/2006	2.8	7.7
RS-10 1 Ft.	9/7/2006	43	7.7
RS-10 2 Ft.	9/7/2006	74	6.6
RS-10 3 Ft.	9/7/2006	15	7.6
RS-10 5 Ft.	9/7/2006	3.1	7.6
CHHSLs		**150**	

All values reported in mg/Kg

Notes: CHHSLs reported as outlined in "Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties," January 2005

TABLE 3
LEAD CONTAMINATION AT DEPTH OF SAMPLE
9/7/2006-9/8/2006
Sacramento Stucco
860 Riske Lane
West Sacramento, California

Depth of Sample	***Sample ID***																			
	TS-1	***TS-2***	***TS-3***	***TS-4***	***TS-5***	***TS-6***	***TS-7***	***TS-8***	***TS-9***	***TS-10***	***TS-11***	***TS-12***	***TS-13***	***TS-14***	***TS-15***	***TS-16***	***TS-17***	***TS-18***	***TS-19***	***TS-20***
1 Ft.	9,200	230	690	190	330	350	940	170	180	420	710	87	58	4.9	3.6	19	20	40	260	1,400
2 Ft.	28	37	19,000	180	2,800	29	1,100	5.7	2,100	160	3.6	290	4.5	2.9	3.0	7.6	50	32	95	920
3 Ft.	3.8	78	4.8	820	13	6.2	650	3.8	2,200	3.8	3.8	2.1	5.4	6.2	3.3	9.6	65	640	1,200	18
5 Ft.	3.4	21	6.0	310	3.4	5.2	3.2	3.4	3.5	3.8	2.8	3.2	4.7	2.3	5.5	1,300	55	3,400	160	12

CHHSLs	**150**

Notes: All values reported are lead values in mg/Kg
CHHSLs reported as outlined in "Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties," January 2005

TABLE 4
CAM 17 DATA
9/7/2006-9/8/2006
Sacramento Stucco
860 Riske Lane
West Sacramento, California

Sample ID	*Date*	*Chromium (+3)*	*Chromium (+6)*	*Beryllium*	*Cobalt*	*Nickel*	*Copper*	*Zinc*	*Arsenic*	*Selenium*	*Molybdenum*	*Silver*	*Cadmium*	*Antimony*	*Barium*	*Thallium*	*Vanadium*	*Mercury*
TS-1 1 Ft.	9/7/2006	39	<1	<1	9.5	35	17	46	7.1	<1	<1	1.5	<1	39	68	<1	34	<0.20
TS-1 2 Ft.	9/7/2006	41	2.4	<1	10	37	15	45	3.7	<1	<1	1.2	1.3	<1	49	<1	34	<0.20
TS-4 5 Ft.	9/7/2006	39	NR	<1	7.3	31	12	44	3.6	<1	<1	<1	<1	2.7	41	<1	23	<0.20
TS-6 1 Ft.	9/8/2006	33	1.1	<1	7.8	38	17	57	9.6	<1	<1	<1	<1	3.3	50	<1	37	<0.20
TS-9 2 Ft.	9/7/2006	35	2.1	<1	6.1	41	23	31	4.8	<1	1.1	<1	<1	20	50	<1	47	<0.20
TS-17 1 Ft.	9/7/2006	70	4.2	<1	5.8	56	15	29	3.8	<1	1.1	<1	<1	<1	85	<1	29	<0.20
TS-19 2 Ft.	9/7/2006	42	1.1	<1	8	42	14	84	4.4	<1	<1	<1	<1	1.2	54	<1	37	<0.20
TS-19 3 Ft.	9/7/2006	32	<1	<1	6.9	36	12	34	4	<1	<1	<1	<1	8.4	51	<1	34	<0.20
RS-3 1 Ft.	9/7/2006	46	<1	<1	7.3	37	13	42	31	<1	<1	<1	<1	<1	44	<1	28	<0.20
RS-5 2 Ft.	9/7/2006	46	<1	<1	7.8	40	16	44	5.6	<1	<1	<1	<1	<1	56	<1	34	<0.20
RS-10 2 Ft.	9/7/2006	44	<1	<1	9.9	49	22	88	5.3	<1	<1	<1	<1	<1	57	<1	36	<0.20
CHHSLs		**100,000**	**17**	**150**	**660**	**1,600**	**3,000**	**23,000**	**8-10***	**380**	**380**	**380**	**1.7**	**30**	**5,200**	**5.0**	**530**	**18**

Notes: All values reported in mg/Kg

CHHSLs reported as outlined in "Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties," January 2005

*: Arsenic screening levels are adjusted to reflect background Arsenic levels found within the state of California.

NR: Value not reported.

Table 5 SUMMARY OF ESTIMATED COSTS			
Costs	Removal Action Alternative		
	Alternative 1 No Further Action	Alternative 2 Onsite Soil Washing	Alternative 3 Excavation and Off-Site Disposal
Direct Capital Costs			
Equipment Costs	0	850,000+	0
Material Costs	0	0	0
Transport & Disposal Costs	0	10,000	300,000-525,000
Backfill & Compaction Costs	0	30,000	45,000
Indirect Capital Costs			
Engineering and Design Expenses	0	15,000	10,000
License and Permit Costs	0	5,000	5,000
Annual Post Removal Action Site Control Costs			
Operational Costs	0	0	0
Maintenance Costs	0	0	0
Auxiliary materials	0	0	0
Total	0	910,000+	369,000-585,000